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UNIVERSITY OF ALBERTA

FAMILY BACKGROUNDS OF EMINENT CANADIAN WOMEN

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GRACE A. SCHLOSSER

A thesis

submitted to the Faculty of Graduate Studies and Research

in partial fulfillment of the requirements for the degree of

MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

Edmonton, Alberta

FALL, 1994



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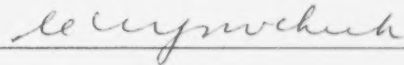
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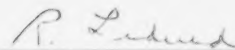
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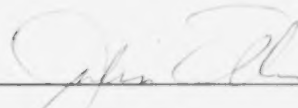
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Abstract

This study is a descriptive investigation of the characteristics of the childhood families of eminent Canadian women. Variables relating to the composition of the family, the climate of the home, and the dynamics of the relationships within the family were examined. The contention that the eminent-to-be occupies a special position within the family was investigated as it was associated with the variables studied. A cohort analysis was done in an attempt to discern changes in the family systems over the time periods of before, during, and after World War II.

About 62% of the women had a childhood interest that was intense enough to be called a "passion" and most of these reported that their interest persisted into and had an impact on their adult career or lifestyle. Reading was the interest most commonly named. Most of the respondents believed they had a special role within the family and most of them felt special within the family dynamics.

The eminent women were found to be predominately the firstborn children of stable families that were matriarchal or partnership in style. Laterborns often were born five or more years after their next closest sibling. The subjects most often referred to their mothers as the most influential person in their childhoods, but those who named their fathers were more apt to perceive of themselves as special within the family. The perception of being special was also significantly related to the size of the family, having brothers, having other eminent siblings, parental style, parental absence, separation from other children, and having an intense childhood interest. The families of eminent Canadian women did not show many significant changes over the time periods analyzed. The family that produces eminence may have unique and stable characteristics that have contributed to the development of eminent Canadian women.

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This thesis is dedicated to all members of my family, but especially to my husband, Joseph, and my children, Valerie, Neil, and Trent. Their love makes my life complete and worthwhile; their support made graduate study possible for me.

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Family Backgrounds of Eminent Canadian Women

Chapter 1 Introduction

This study is a descriptive examination of the childhood backgrounds of eminent Canadian women focusing on certain factors within the family of origin. Chapter 1 serves as an introduction to the topic, the terminology, and the research problem. The first section of the chapter provides the background to the problem, emphasizing the lack of research in this field and establishing the need for further study. Relevant terms that emerge from contemporary literature are defined and discussed in the second section. Then the purpose of the study and the questions under investigation are presented. The organizational outline for the remainder of the dissertation is set out in the last section of this chapter.

Background to the problem

Female underachievement is manifested in underemployment as well as in underrepresentation in positions of power and leadership. There is a paucity of research addressing the reasons for this underachievement, especially as it pertains to factors in the childhood and adolescent years of prominent women. The sporadic interest in gifted girls has usually focused on career counseling or on establishing the existence of gender differences. Much of the emphasis in past research into gender differences has been on the identification of barriers to female advancement. Despite the prolificacy of barriers to success, a number of girls manage to overcome these problematic areas and go on in their lives to achieve recognition in their field. In a discussion of barriers and facilitators of individual achievement, the home environment plays an uncertain role. This study is an attempt to develop a picture of what the families of origin for eminent Canadian women were like.

Women who have achieved eminence in their field are clearly a unique group. They differ from other women as evidenced by their productivity in adult life. What is needed by modern educators and psychologists is knowledge of the differences they

may have displayed as girls. There have been very few studies addressing the backgrounds and early lives of gifted females. "Research focused on the overall development of intellectually gifted women in relation to their educational, personal and career choices is exceedingly rare" (Reis, 1991, p. 193). Comparison of their families of origin and defining variables of childhood backgrounds is a topic that has been largely unaddressed. The following quote from Janos and Robinson (1985) indicates the state of the research field at that time and it is largely unchanged today.

Familial influences on the development of intellectual giftedness are poorly described in the literature despite their central role. Although the general picture of familial relationships suggests that such children are cherished by parents, special stresses exist in a substantial percentage of families. This is an area ripe for further exploration. (p. 182)

Eminent women today were undoubtedly the gifted girls of the past; although for the most part, they were not identified as such when they were children. The path from being a gifted girl to becoming an achieving woman is an uncharted course. Gifted girls do not always turn out to be creative adults. Creative women were often not recognized as gifted when they were children. There is a need to study the highly successful adult in order to understand the connection between the concepts of creativity, productivity, eminence, and giftedness. The link between being gifted in childhood and becoming eminent in adulthood might lie in the unresearched organization of the family home.

The family is a complex organization of human dynamics that is usually hidden from public view. Families differ greatly as to their value systems, the role models provided by the parents, and the opportunities and encouragement provided to the children. There are, no doubt, inherited and cultural factors that the family provides in the setting for the differential treatment of girls and boys. Expectations are often linked to gender roles. Not only do parents influence the development of an individual's self-concept, they also decide the opportunities that will be available to that child. There

exists, at the present time, a clouded picture as to how family dynamics influence adult productivity. The surface characteristics of a family may reveal little about the underlying influences on the child. The only way we can really delve into what takes place within the family is to ask the participants for their perspective.

There are two main views of the influence of home life on the gifted individual and they are contradictory in nature. One presents the notion that a negative home atmosphere somehow promotes productivity. The other point of view is that the learning environment must be responsive to the needs of the child in order to assist in the development of giftedness. This view holds that only if the child is given ample encouragement and breadth of opportunity will the child be likely to excel. The behaviors of the parents and the ways in which they socialize their child are crucial elements to the development of the child. Proponents of this stance are opposed by others who believe that the gifted child must first and foremost be innately talented.

Today it is commonly accepted that both heredity and environment have an effect on cognitive development. The parents are responsible for the inheritance of the intellect or talent that the child has. The second contribution of the family is to channel these "gifts" in a way that results in high achievement. Most families of the gifted would like to have some guidance as to what they should in fact do in order to enhance the prospects for their youngster. A better understanding of the home environments of those women who have achieved is desirable in solving the puzzle of which types of early experiences facilitate excellence and which provide barriers to the girls involved.

Public interest in exceptional individuals arose in the late nineteenth century. They were labelled as geniuses and their abilities were publicized by the work of Galton and other hereditarians who emphasized genetic factors predisposing certain individuals to success. The early studies of the eminent focused predominantly on adult males who were sometimes even deceased (Cox, 1926; Galton, 1869; Goertzel & Goertzel, 1962; McCurdy, 1957; Roe, 1952, Terman & Oden, 1959). Most of the studies dealt with

identifying intelligence or personality factors that distinguished outstanding individuals. Anne Roe's work from 1949 to 1953 changed the terminology from genius to eminence and the emphasis to socio-cultural issues that helped or hindered the development of genius rather than genetic precursors.

Eminent people are highly unique. The study of eminence does not lend itself well to quantitative research because each individual is likely to be uniquely contributing somehow to a particular field of endeavor. Although the need for case studies is recognized, this research is based on the premise that similarities among the variables in the childhood experience of eminent women must be derived before the individuals can be studied in depth. Despite the difficulties in doing a causal-comparative study of eminence, there is a need to find the patterns and trends in their background that will guide educators in the identification and promotion of these gifted individuals in society today. The rationale for the study is to seek out the commonalities in the families of eminent Canadian women in order to ascertain some of the indicators of family structures and climates that facilitate achievement and success. A collective study of eminent Canadian women was seen as requisite in order to establish the foundation for further research.

Definition of terms

Eminence is defined for this study as being listed in Who's Who of Canadian Women (Pasternak, 1986). The subjects were originally chosen for the list based on the following indicators of their success: financial rewards, status among their peers, attainment of goals, power and influence over others, and autonomy over their own work and activities. In an attempt to rationalize why women attain less, it must be mentioned that the indicators used to assess achievement and renown are more often seen in males than females because the indicators used come from a male bias. The accomplishments of gifted men are easier to document and that explains somewhat the preponderance of men in the early studies.

The family is composed of the set of individuals with whom the eminent-to-be resided during her childhood years. The subjects were instructed to include their parents and siblings. If they did not live with their parents and siblings, they included the guardians of the childhood home and the children who shared it with them. Sibship, a term used to describe the set of siblings within the family, refers to the subject and her brothers and sisters. The position of the eminent woman within her family of origin refers to her placement within the family constellation, as well as to any special role she assumed within the dynamics of the family.

Various terms are used in the contemporary literature to describe the phenomenon under study. The subjects in the research projects cited are diversely described as being gifted, creative, highly successful, talented, or eminent. There is a profusion of terms that are not always used with distinctness and clarity.

The present day understanding of being gifted or talented is much broader than the traditional view that emphasizes obtaining a high score on an IQ test. Anything written about gifted education is plagued by the lack of clarity of definition of what constitutes giftedness. There are many approaches to defining giftedness, most of which emphasize the multifaceted nature of being gifted.

The importance of personal characteristics is acknowledged by Renzulli (1986) in his definition of giftedness which includes a combination of above average intelligence, task commitment and creativity. Sternberg (1986) is the author of a definition that includes three aspects as well, but these are different ways of being gifted. A gifted child could be internally, cognitively gifted with superior mental functioning, or experientially gifted by relating cognitive processes to situational tasks, or contextually gifted by applying intellectual processes to functioning within the contexts of real life. In this study being gifted refers to what is earned through the life's work or through contributions or deeds: thus, being a gifted girl implies having a potential for high achievement.

Creativity is another term that is interpreted differently by the experts. "In almost every field of human achievement, creativity is usually the distinguishing characteristic of the truly eminent. The possession of high intelligence, special talent, and high technical skills is not enough to produce outstanding achievement" (Torrance, 1959). Americans and Canadians use Torrance's definition which regards creativity as a set of skills that can be taught to students and that is measurable by a series of tests. This notion characterizes creativity by fluency, flexibility, elaboration, or originality. Feldman (1988) sees this definition as being an impotent and narrow theory which is unable to oppose the intelligence definition of giftedness. Creativity, by his definition, involves transformation of the domain wherein the high performance has been achieved. Freeman (1985) takes a more general approach as to what constitutes creativity by stating that it is the flexibility to try different things and to be able to make mistakes. Sternberg, after analyzing most of the contemporary work available concerning creativity, is optimistic enough to state, "The commonalities are prominent enough to suggest that a unified field of creativity may eventually be possible that will integrate the various perspectives" (Sternberg, 1988, p. 7).

There are clear links between creativity and motivation, and between creativity and giftedness. The proliferation of definitions and the lack of consensus among the experts has led to the conclusion that intelligence, creativity, and giftedness may not be separable in referring to eminent individuals. Eminence for this study has been defined in a very specific way which is not always equivalent to the ways in which other authors have used the word.

Purpose of the study

This study is a follow-up study of eminent Canadian women who were surveyed by Yewchuk, Chatterton, and Jackson (1990). The previous study focused on demographic variables relating to the careers of these prominent women, their experiences with barriers or facilitators in career development, and their personal

satisfaction with themselves and life. In the present study the focus changes to family-related variables such as placement within the family constellation, perceptions of the family climate by the eminent woman, and her role and interests within the family of origin. The purpose of this research is to gain deeper insights into the childhood development of women who have achieved renown in their adult lives. This thesis will serve only as an introduction to further more indepth research into family relationships.

A unique opportunity is provided in this study to examine collectively certain aspects of the family in a descriptive and exploratory fashion. The responses are viewed as an aggregation of autobiographical accounts collected sometimes many years later. There is an effort to understand the psychological development of these prominent individuals. This dissertation strives to present a description of the family backgrounds of women who have remarkable abilities without studying their accomplishments or abilities or attempting to establish causality.

Given the fact that all the subjects demonstrated adult productivity, I have attempted to conceptualize how eminence is related to the structure and the dynamics of the family of origin. This dissertation proposes to enhance the emerging picture of the eminent woman in terms of her family history by seeking out commonalties of the family circumstances among the sampled group. It is an attempt to establish the place of the eminent-to-be within the family and thereby relate specific aspects of the girl's position within the family to achievement in eminence. The main aspects of the family studied include the composition of the family, the climate within the home, and the special role and interests of the girl within the family dynamics.

The hypothesis being studied is that these eminent women as girls had some special position within the family that enhanced their achievement motivation and self-esteem in such a way as to promote their achievement and subsequent renown. The special position they held was investigated by researching factors in the composition, the climate, and the dynamics of the family of origin.

The research questions were:

1. What was the composition of the family of origin for the eminent Canadian women sampled?
2. How did Canadian women who have achieved eminence perceive the climate of the childhood home?
3. What were the special roles and interests that comprised the position of the eminent-to-be within the dynamics of the family?

The specific aspects that were investigated relating to the composition of the family include the age of the parents, the birth order of the subject, the sibship size, and differences within the sibling set as to age, sex, and incidence rate of eminence. The variables investigated referring more to the climate within the home include the parenting style, parent marital status, naming of the influential person, absence or loss of a parent, having a sibling with a problem, and being separated from other children. The role of the girl within the family dynamics refers to her perception of herself as being "special" within the sibship or as an only child, indicators of her being special, having a role within the family, the role of her siblings, having an intense interest or passion, and continuity of this interest into adulthood.

Organization of the thesis

The first part of Chapter 2 presents an overview of the current literature relating to gifted girls. The last sections of this chapter converge on those studies that pertain to eminence and the childhood factors that have been studied as precursors to adult renown. Chapter 3 gives an outline of the methodology used in analyzing the data. The results of the data analysis are presented and discussed in Chapter 4. Chapter 5 provides a summary of the findings, as well as the limitations of the study, and ideas for future research.

Chapter 2 Literature Review

This chapter initially presents a general review of the literature as it pertains to gifted women. The history of research on gifted women is briefly presented, followed by a review of the common themes in the contemporary research of giftedness in girls. The explanation of gender differences through the identification of barriers that curtail achievement in females is followed by the various approaches pursued by different psychological perspectives. Studies of eminence are presented, followed by those with specific reference to eminence in women and those pertaining to variables in the familial background of eminent women.

The historical approach to the study of gifted women

The first study that referred to giftedness in females was Terman's longitudinal study began in 1921 (Terman & Oden, 1959). He and his associates administered IQ tests to his subjects five times during their lifetimes, from ages 11 to 62. His sample included the top 1% of the population as nominated by teachers and who had a minimum IQ score of 135. In the original sampling 831 subjects were male and 613 were female. Terman publicized statistics about the proportion of gifted women who ended up in traditional occupations, homemaking or in professional careers. All of the follow-up work on the sample confirms the finding that the women achieved far less, both in terms of educational and occupational attainment.

No commentary on the history of the study of gifted and talented women would be complete without discussing the contributions of Leta Stetter Hollingworth. This early pioneer pointed out that superior intellect and eminence are not synonymous, especially when it comes to women because of their sociological limitations (Silverman, 1989). In the early 1900s, the general perception was that women were less capable intellectually of understanding abstract concepts and were innately inferior education-wise. This point of view stemmed from the work of Galton who attempted to show that genius ran in certain families by establishing eminence as evidence of giftedness. Hollingworth

argued that women were not as frequently called eminent because of sociological factors and not their biological limitations. Her study of Terman's original data found an equal number of females as males being identified as gifted. In contrast to Terman, she did not attribute achievement to inherited ability, but to environmental factors and emphasized the unequal opportunities afforded to women.

"The importance of Hollingworth's crusade has not been fully appreciated, since we are still relying upon eminence as the sine qua non of giftedness a half century later" (Silverman, p. 93). She emphasized that the first 12 years of a gifted girl's life are crucial to her development as a gifted adult. A program of studies for gifted girls should include education for originality and initiative. Hollingworth will be remembered for her perseverance and her clear vision regarding gifted females in spite of the pervasion of the prejudices and stereotypes of her time. Her real contribution concerned expanding the concept of giftedness from being a male trait to one which was common in females as well.

Despite the early remonstrations from Leta Hollingworth, the books and articles on gifted education written before the 1970s referred mainly to the masculine portion of the population. "This emphasis on the gifted and creative male was not unjustified or unreasonable in light of the overwhelming proportion of men who had achieved outstanding status and recognition and the prevailing biases of our society regarding the roles of women" (Callahan, 1979, p. 401). Girls have been found to consistently receive higher grades in school than boys throughout elementary, high school, and college (Reis, 1991). Their success in school is not matched by a similar level of achievement or success in careers.

Since the revival of feminism in the 1970s, there has been a recognition of the fact that women are severely underrepresented in high achievement in society and much more attention has been given to the reasons for this underrepresentation. Early interest in the field focused on documentation of gender differences. Maccoby and Jacklin

(1974) in their study of the psychology of sex differences found similarities in girls' and boys' basic learning, perception, and memory processes. Their most publicized finding was that girls scored higher on verbal abilities; whereas boys were superior to girls on spatial abilities. This finding was used as an explanation for the differences among the sexes in achievement in mathematics. These early notions were countered by Epstein (1988) who stated they were not true when the wide variations and differences within a sex were compared.

The findings do not support a hypothesis of innate differences between men and women. Whether one is male or female does not predetermine achievement, but gender-role socialization probably does. It would seem that there was a period of history in which we overemphasized the differences. Willinsky (1990) sees the emphasis on these differences as another method used in the devaluation of women. In addition to biological differences, other topics pursued have been the differential school experiences of boys and girls, inquiries into patriarchal stereotypes, and the demographics of gifted youngsters such as socioeconomic status and career patterns of their parents. Methodology has varied from the phenomenological investigation of giftedness in individuals to descriptive statistics and path analysis of data based on gifted groups.

Feingold's research (1988) indicated that cognitive gender differences seemed to be disappearing. Studying cohort groups during the period from 1947 to 1980, he showed that differences in cognitive abilities between the sexes were declining. Schuster (1990), in a comparison of cohort groups using the data from four earlier studies, reported that conditions were improving and that younger women were pursuing advanced degrees and non-traditional careers. The 1910 cohort group used was from Terman's original study. Gifted women born in the 1940s had higher scores on different scales of well-being: fulfillment of potential, life satisfaction, and self-perceived competence. Women were overall very modest about being "gifted"; many dismissed the idea they were exceptional or played down their abilities.

Unequal access to education and opportunity was first pointed out by Hollingworth as contributing to the underrepresentation of females. In more recent times we would think that such obvious inadequacies would no longer describe the educational scene. Reis and Callahan (1989) point out that despite increasing enrolment figures for girls in science and mathematics and encouraging employment statistics for women, much more research is necessary in the field. They emphasize the importance of further exploration of the variables in the environment that can be manipulated in order to enhance the achievement of girls and the individual characteristics of girls that can be influenced by these environmental variables. Arnold (1993), in a study of those who graduated at the top of their classes, reported that the female students, even though they were the valedictorians, are at-risk for underachievement. It would seem that the optimism expressed by Feingold and Schuster was premature.

Common themes in contemporary literature

There is no question that females continue to underachieve in today's society. Reis and Callahan (1989) in their review of the status of women emphasize that, despite apparent societal changes that have taken place in the 1970s and 1980s, gifted women continue to be underachievers. Female underachievement is also demonstrated in the feelings that women express regret at the loss of opportunity (Reis, 1987).

Clark (1992) lists a multitude of barriers that negatively impact gifted girls evolving from several sources: the home, the school, and society in general. The lack of mathematics preparation is a serious factor that can reduce the career choices of girls, especially in the sciences and fields involving technology. The pattern of female success is not a common one in our society, and it is not an encouraged pattern. She believes that the status of women has actually declined in the years from 1950 to 1970.

The general focus today is on the explanation of gender differences. Educators and researchers have been striving to identify "barriers" which serve to prevent the equal participation of women in careers, higher education, and other activities in society.

Many authors have referred to the work of developmentalists who envision female development as being different from the traditional developmental theories. Another theme emerging from the literature points out the inadequacies of evaluating female achievement from the traditional standards developed within the limits of gender from a male perspective. There is a call for a longitudinal approach as a necessary component in the study of the development of giftedness in girls.

Identification of external and internal barriers

"Current research usually focuses on the internal and external barriers to the achievement of gifted women" (Walker, Reis, & Leonard, 1992, p. 201). The internal-external barrier debate is similar to the nature/nurture issue in which we strive to establish causation as being culturally influenced or heredity based. Thus, external barriers are those which derive from the absence of social support; internal barriers derive from the personality or cognitive processes of the girls involved.

Sex-role stereotyping and societal expectations were the first external barriers to be identified. "Of all existing barriers, sex-role socialization's impact on the child's developing self-belief system is the most pervasive and limiting" (Hollinger, 1991, p. 136). Gender role socialization leads to a number of more subtle discriminatory devices and biases. "Of course, all females may be influenced by these pervasive biases in texts, tests, and other instructional material, but it is perhaps the gifted female who will be most stunted because her potential is the greatest for fulfilling a wide variety of roles and careers" (Callahan, 1979, p. 412).

Societal expectations directly affect the child through the home and the school. Houser and Garvey (1985) showed that those girls who enrolled in career education for nontraditional vocations demonstrated significantly more support and encouragement from significant others. Eccles (1985) stated that gender stereotypic differences appeared on tests of values, interests, and occupational choices of gifted girls and boys at an early age. Many highly capable girls have poor self-concepts of their ability in the

fields of mathematics and science. In a model of the influences on achievement-related choices, Eccles included the expectation levels of the socializers as factors.

Parental attitudes and expectations affect their child's own expectations of success. "Identification with a father or masculine model, for example, has been characteristic of successful professional women" (Callahan, 1979, p. 422). Callahan felt that association with a strong maternal figure could be inhibiting. "It may be that interests, background, and family have differential influences on gifts and talents according to the area of potential" (Callahan, 1979, p. 411). This statement portrays the lack of certainty that pervades the entire area of study.

Dickens and Cornell (1993) studied the relationship between the mathematics self-concept of girls with high ability and their parent identification. They concluded, "Although the results of this study were consistent with a model in which a parent's expectations have a direct effect on his or her daughter's mathematics self-concept, it is conceivable that the direction of effects goes in both directions, and indeed that both are influenced by the daughter's mathematics ability and achievement" (p. 71). Although there is a relationship between family expectation levels and students' self-concepts, determining its nature and then ascertaining how this correlates with performance is a complex and complicated matter.

The school experience itself can discourage gifted girls from pursuit of interests that would lead to their fulfillment of their potential. Cooley, Chauvin, and Karnes (1984) compared the teacher attitudes of both male and female teachers toward gifted students. They felt perceptions towards females were improving. They reported that all teachers were encouraging girls to enroll in what had been traditionally male courses. In addition, the majority of teachers were not showing a preference to work with one sex over the other.

Recent work on home and school influences on gifted girls has focused on the socialization of young children. The perceptions of the peer group within a classroom

setting were found to be deleterious for gifted girls. Parental expectations have been studied for gender differences. Attitudes of girls and their mothers were compared for groups of gifted and nongifted girls.

Luftig and Nichols (1991) studied the social status of the gifted and found strong gender differences. Gifted boys were perceived by their classmates as being humorous, more attractive, and more creative than other boys. Gifted girls were perceived as being sad and moody. Gifted boys were found to be popular among their peers; whereas gifted girls were the least popular in the classrooms. Even though gifted children have an advanced knowledge of social behavior, they do not always behave in ways that are socially adaptive. Gifted girls were singled out as being a group at-risk for continued achievement because of their inability to establish good social relationships with their peer group.

Early work had pointed to societal expectations as being an external barrier to female achievement, but few studies differentiated between societal expectations and parental expectations. Differences in sex-role expectations among parents were studied by Anderson and Tollefson (1991). Their results indicated no significant differences between the criteria used in decision making of the parents of the gifted girls and those of gifted boys. Parents of both sexes used the criteria of having their child accepted by the peer group as the most important standard. More importance was placed by the parents on social criteria than on the academic achievement of the youngsters.

Girls tend to emphasize relationships and the most likely adult role model is their mother according to Hay and Bakken (1991). They studied the attitudes of girls and their mothers toward fear of success, gender identification, occupation choice, and toward society in general. They found that the attitudes of gifted girls towards society closely correlated with those of their mothers. There were some differences between the generations in their attitudes toward non-traditional careers. These researchers also observed differences between gifted girls and their non-gifted counterparts in gender

role preferences. The importance of the mother as a role model is in direct opposition to that expressed earlier by Callahan (1979) who emphasized a close relationship between gifted girls and their fathers.

Kathleen Noble (1989) believes that external barriers become translated into internal barriers as an additional set of obstacles to the success of the talented female. She listed the barriers to female advancement as being various interpersonal factors, socio-cultural factors, and intrapersonal factors. Interpersonal factors include the ways in which the peers and family of gifted girls underestimate and reject their exceptional abilities. The socio-cultural factors consist of inadequate preparation of females for careers, the double messages provided by society regarding careers, and the lack of time afforded females for creativity in their careers because of family responsibilities. The primary intrapersonal obstacle is self-doubt. Many gifted girls disappear from the educational and career scene. Those who reach maturity with their giftedness intact, despite these obstacles, are often faced with other problems that counsellors must deal with: high suicide rates, eating disorders, and exhaustion.

Internal barriers refer to the personality factors, interests, and values of the individual. A personality factor that is considered an influence on success rate is the level of achievement motivation. Interests and values are used as indicators of motivation to success. The Renzulli definition of giftedness includes motivation as one of the triads of prerequisite characteristics for giftedness. Maccoby and Jacklin (1974) found no significant difference between gifted girls and boys except that boys showed increased motivation under competitive situations. Horner (1972) studied data using a projective test. She concluded that females have a fear of success that severely affects achievement motivation and actually motivates them to avoid success.

There is considerable disagreement about the role of competition in the development of the gifted girl. Barbara Kerr (1990) indicated that society commits its first offense against the full development of girls by making them compete between the

ages of 3 to 10. She believes the competitive - cooperative gender role issue limits girls even further. In a roundtable discussion of gifted women (Ellis & Willinsky, 1990), Carolyn Callahan stated her belief that women must be able to compete in order to survive and called for a drive to make women more competitive. Some feminists would argue that the changes must be made so that women are not called upon to compete; however, others like Lee Anne Bell advise educators and parents to prepare their girls for the world as it now is.

Much of the research on sex-role development focuses on personality traits that have been considered desirable for males and females. The instrumental characteristics like self-confidence, ambition, and independence have been associated with the masculine role; whereas expressive characteristics like warmth, compassion, and sensitivity have been associated with femininity. Hollinger and Fleming (1988) examined the self-perceptions of sex-roles of gifted females. They found that instrumentality correlates to occupational confidence and life satisfaction. Instrumentality must be developed within girls; however, expressiveness is a significant correlate as well and should not be excluded from their development.

In a study of women in high positions, these researchers identified four internal barriers to the overall underrepresentation of women (Hollinger & Fleming, 1984). These internal barriers were underachievement, non-assertion, fear of success, perception of social competence and social self-esteem. Women free from internal barriers showed high self-esteem and competitiveness, absence of fear of success, strong self-perceptions, high work and mastery orientation.

Internal barriers were explored as a series of dilemmas by Lee Ann Bell (1989). She identified through ethnographic research with elementary school-aged girls that they perceive themselves in either-or situations. Five core dilemmas emerged from the study: smart or social, silent or bragging, beauty or marginality, failure or perfection, passive or aggressive, and conforming or being punished. "This double bind leads many highly

capable girls to lose their self-confidence, minimize their abilities, downplay their achievements, and jeopardize their future options" (p. 127).

Barbara Kerr's (1985) writings have made significant contributions to the study of the development of gifted girls. Four common behaviors of talented women are specified: diligence in on-task behavior, propensity to tell people what they want to hear, reluctance to take academic risks, and the use of personal charm and perceptiveness to impress superiors. These behaviors underlie the underachievement of females. She believes that underachieving women are not maladjusted, but are well adjusted. While the adjustment of gifted girls is a strength and a state of health, it also impedes their achievement. Gifted children have a multitude of strengths, a factor that may serve to confuse and complicate their career planning.

Kerr listed three internal barriers: the Cinderella complex, the impostor phenomenon, and the Horner effect. The latter, which is commonly referred to as a fear of success, presents the belief that women continue to let men win if they are placed in a competitive situation with the opposite sex. The Cinderella complex refers to the wish to be cared for. Low academic self-esteem contributes to what is often termed the "impostor syndrome," wherein the successful female will attribute her achievement to luck or hard work rather than to her abilities.

Others would agree that there seems to be a need among the high achievers to explain away their own accomplishments rather than taking credit for them. Cramer and Oshima-Takako (1992) studied how students attribute their successes and failures in performance in mathematics at three grade levels. Gifted girls used counterproductive attributions relative to the boys at the grade nine level.

Cultural stereotyping of sex roles and the mixed messages given to girls are cited by Sally Reis (1987) as the factors that contribute to female underachievement. The internal barriers that she points to are: fear of success, perfectionism, the impostor syndrome, and lack of planning for the future. The perfection complex occurs when

women set for themselves the unreasonable goal of doing everything perfectly. This complex is closely associated with the impostor complex. Like Barbara Kerr, Reis points out that women may be underachieving purposefully. It would follow from humanistic psychological theory that such deliberate underachievement would result in unhappiness for those involved.

Kathleen Noble (1990) called for more research questioning the protective and risk factors that shape giftedness in women and their internal and external defenses that enable them to cultivate their abilities in the face of adverse social conditions. She said that women need strength within themselves in order to succeed. In an article written in 1989 she pointed out that gifted girls are often unaware of their own abilities or ambivalent towards them. They may even be frightened by their own potential.

Most authors stress that both internal and external barriers affect the girls in the schools today. A comprehensive list of problems that may beset gifted girls on their way to self-actualization includes the following: stereotyping, lower teacher expectation, absence of role models, listening to advice of others more, being more critical of themselves, lower self-confidence and lower career expectations (Reis & Dobyns, 1991). Hollinger (1991) stated that gifted girls in the 1990s will face the same external and internal barriers that have existed for the past two decades. She presented intervention strategies that can be used to improve the career development of girls.

Developmental perspective

Several of the researchers have included in their compositions some reference to the work of Gilligan (1982). This fact seems to indicate a shift in the contemporary literature from the explanation of gender differences to a more developmental approach. The major developmental theories were formulated on the basis of male development. Gilligan believed that women have "a different voice" and that female existence consists of relationships and interconnections with others. The independence that is nurtured in males is not supported in girls, so that their development is entirely different. Women

place more emphasis on and value the relational part of their lives more than that of their careers.

Girls learn through connection with others and through human relationships. Belenky, Clinchy, Goldberger, and Tarule (1986) have presented the idea that women may have different ways of knowing from those of their male counterparts. Women's perspectives on "knowing" may be unique: use of traditional modes of learning that have been derived for the learning processes of men may not be generalizable to women.

Brown and Gilligan (1992), in their five-year study of 100 girls, focused on the relational lives of the participants and how these changed with adolescence. Students from a girls' school in Cleveland, Ohio, ranging in age from 7 to 18 years old, were interviewed in an effort to obtain more information about women's development in the critical time period between childhood and adulthood. For these subjects, early adolescence was described as a crossroads when a compromise between voice and relationship is reached. There was a tendency for the adolescent girls to dismiss their own experience and dissociate themselves in various ways. They modulated their voices or silenced themselves in their relationships in order to become more like some ideal image of what a woman should be. This recent work expanded and revised Gilligan's early work by suggesting that adolescence is a time of disconnection and crisis for girls.

In a round table discussion several leading authorities in the field of gifted education agreed with taking a developmental approach (Ellis & Willinsky, 1990). Kate Noble suggested that there may be seasons to a woman's life. Carolyn Callahan stipulated a need to explore female-oriented developmental models like Gilligan's. Sally Reis pointed out that certain developmental stages are key to female achievement: the end of elementary school, the end of junior high, and the end of high school. There is

also another stage occurring at the university level when these gifted young women begin to doubt the realization of their dreams.

Young girls tend to do very well in school and are confident and secure prior to adolescence. It is at this time that societal gender roles affect their lives and it is also at this time that females begin to show reduced intelligence scores, reduced enrollment in gifted programs, lowered self-regard, and lower self-concepts. There may be issues that are more important to girls than they are to boys. Some examples may be cooperation, interpersonal relationships, helping others, and ecological issues. Because relationships are so important to girls, their decision-making is influenced by consideration of the impact upon and the opinions of those others close to them.

A recent study of the gender distribution in programs for the gifted (Read, 1991) demonstrated an interesting and dramatic pattern change. Girls outnumbered boys from grades 1 to 9. Suddenly, as high school began, their numbers declined. From grades 10 to 12, the number of girls in gifted programs was significantly lower than the number of boys. Access to programs for the gifted is an important determiner of success and this inequality in high school must severely limit the advancement of females. When girls were asked why they did not participate as often in high school gifted programs, peer pressure was most often cited as the discouraging factor. Other factors given were administrator and faculty attitudes, program content and models, parental pressure, and the identification process.

In a developmental study of the lives of gifted women, Walker, Reis, and Leonard (1992) compared data on women representing the decades from the 1910s to the 1980s. The internal and external factors that affect vocational and educational choices were compared across these cohort groups. One of their findings indicated that some of the personality factors and the attitudes differed, depending on whether the women had a career or were homemakers. The older women were more tolerant and happier than the younger counterparts. The younger women were attaining more educationally and

career-wise. The subjects tended to rate as achievements their personal and relational accomplishments as often as their career accomplishments. The most frequent concerns expressed were consistent across the cohort groups. All gifted women are apprehensive about "vague and traditional school and societal expectations, lack of challenging curriculum, concerns about or denial of being labeled gifted, and inadequate athletic programs for females" (p. 205).

Kline and Short (1991), in a cross-sectional study of 89 gifted girls throughout their school years, discovered significant decreases in self-regard and self-confidence over the years. Accompanying the lowered levels of emotional resilience were increases in perfectionism and discouragement to the point of feelings of hopelessness. "Because of gifted girls' increased levels of awareness, sensitivity, and potential, their conflict and loss are magnified" (p. 118). The junior high years were usually the time when the attitudinal shifts occurred. The high school years were identified by the authors as being when gifted girls are at risk. "By high school, the females feel significantly less willing to reveal themselves to those around them, hiding their intelligence, sensitivity and feelings, and trying to act tougher than they are" (p. 120). They develop a preference for relationships at the same time that they are being pressured by society towards competitiveness and individualism. These agendas cause conflict for girls which is further complicated by societal expectations that girls be nurturing, passive, and dependent. There is still pressure to be "feminine" and to fulfill the traditional roles of family and marriage.

The emotional vulnerability pointed out by Kline and Short was furthered by the work of Strip, Swassing, and Kidder (1991). They pointed out that gifted students are more aware of the problems and issues facing the world than their nongifted counterparts. This intellectual advancement is often not matched by advanced emotional maturity. The students are in conflict with themselves, torn between pleasing their parents and fitting in with their peers.

The fact that there are few creative women in the visual arts, music, and mathematics was recently brought to our attention by Jane Piirto (1991) who believed that women choose careers as art educators rather than artists. She attributed this fact to the changes observed in adolescence in girls as they strive to reconcile their roles as females with their careers. Female artists demonstrated lower self-image and less passion towards their work than male artists even if their art products were equal in quality. "The necessity to achieve early and to continue producing, and the necessity for commitment and intensity in pursuing a career that calls for creativity, may work against women" (p. 146).

Higham and Navarre (1984) have pointed out the need for interventions in the adolescent years of gifted females which would encourage and enable them to achieve to their potential. Pedagogic interventions have also been suggested by Angeline Martel (1990), who stressed the "ideological masking" in the educational context that has served to obscure the marginalization of gifted girls. She pointed out that the curriculum and its associated materials have been set to meet the needs of boys who are more difficult to control in the classroom setting. Females are more cooperative and collaborative than males.

It is possible that the development of females is not so much different as that it proceeds at a different rate in the lifespan process. Many achieve a great deal later in life (Reis, 1991). Often, it is only after the family has been raised that the woman has the time and energy to devote to a career that will give her the status and attention needed to be recognized as highly achieving or even as eminent. The study of the various cohort groups (Walker et al., 1992) indicated that many gifted women have not attained their career or lifestyle aspirations by the age of 29.

The influence of the different barriers may be pervasive at varying developmental stages. Hollinger and Fleming (1993) found that adolescent gifted and talented girls did not recognize the existence of external barriers in their pursuit of their aspirations. In

subsequent follow-up, though, the same subjects did report encountering gender-specific external barriers. Perceiving oneself as being agentic rather than expressive contributes to self-esteem, to the achievement of individual goals, as well as to increased satisfaction with oneself. "Over the years, these self-perceptions have repeatedly proved to have substantial explanatory power for understanding the diverse life choices of the sample" (p. 158).

"One of the most obvious gaps in the research literature on giftedness has resulted from the failure of most investigators to assume a developmental perspective."

"Psychologists know very little about the developmental course of giftedness or talent, about the nature of environmental opportunities that nurture their realization, and about the nature of conditions that must change over time to ensure continued development of giftedness" (Horowitz & O'Brien, 1985, p. 450). Giftedness does not easily lend itself to a developmental theory because the concept of giftedness pertains to individual differences. In spite of this limitation, I believe that a theory of female development will contribute to our understanding of giftedness in girls and women.

Giftedness within the limits of gender

Understanding of the phenomenon of female underachievement may have to go beyond the study of personal and societal barriers. Eccles (1985) felt that the achievements of women are measured by standards used to measure men's successes. Perhaps a different scale is needed by which to measure the achievement of females. Success and achievement may need to be defined in terms of what women strive for themselves. Constance Hollinger (1991) also perceived a need to compare women with other women. "Further the time has come to examine individual differences within girls to determine those characteristics likely to be influenced by the environment and those experiences and conditions conducive to full development of potential" (Reis & Callahan, 1989, p. 104).

It may be time to evaluate the success and achievements of gifted women according to the accomplishments of other women and not according to the standards set by our patriarchal society. Hollinger and Fleming (1992) examined the achievements of the Project CHOICE subjects 14 years after their initial contact. The extent to which these women realized their potential was studied from the usual point of view as it relates to society's standards, and again according to their own individual goals and aspirations.

Kerr (1985) studied a group of girls identified as gifted in the 1950s of which she was a member. Her sample of girls born in 1952 showed similar proportions in the traditional female roles as Terman's sample of women born in 1902. She concluded that her classmates denied or minimized their giftedness and accepted their underachievement and obscurity with "cheerfulness, compliance and children." Similar findings indicate that the changes for women have not been substantial.

By studying a group of women who had been identified as gifted and differentially educated, Barbara Kerr's study was important because it pointed out that even with these advantages this group did not achieve according to their potential. Kerr attributed the drop in intelligence in adolescence to the fact that girls decide not to try on the tests because they believe that it is not socially acceptable to do well. "Since gifted girls are good adjusters, they adjusted - and may have begun to deny their giftedness" (p. 99). Kerr indicated the critical shift in the value systems of girls from achievement to relationship needs takes place during adolescence. "The major shifts in psychological needs of gifted girls probably account for the conflicts felt by so many eminent women as adolescents. It is likely that society's emphasis on the impossibility of combining love and achievement forces many gifted girls to become preoccupied with their relationships rather than personal attainment" (p. 101). During the time period when girls are preoccupied with relationships, boys become concerned with their careers. She

pointed out that the age of 14 is a critical time in the development of girls, especially in their identity formation.

Hollinger (1991) believes that the 1990s will be even more limiting to career development of females than the previous 20 years have been. She has pointed out that career counselling has followed what is a male-determined approach, that is, matching interests, values, and abilities to a career. Women may need a more complicated psychological approach to career counselling. At a time when establishing one's identity is uppermost, the girl is caught between conflicting stereotypes. There are differences in the expectations for the gifted and those for being female. Societal expectations for a gifted male would be clear; develop your career to be the best you can be. The message for the gifted girls is complicated by an adjoiner to be the best you can be and still remain a female. A return to the traditional roles provides a sense of security in this ambiguous conflict. "For gifted young women who underestimate their intellectual abilities, value career status less than their male counterparts, and accept occupational stereotypes as valid, the vast majority of challenging, high-status career options will be eliminated" (p.137).

Christine Phelps (1991) postulated seven vectors or dimensions that comprise the central developmental task which is identity formation. Children must develop competence, purpose, integrity, and autonomy. As these components are developing, the children must also establish their identity, learn to manage their emotions, and have freeing interpersonal relationships. These concerns are presented as possible intervention strategies to be used with gifted adolescent girls in order to further their career aspirations.

Studies of those girls identified as gifted may provide clues as to characteristics that predict success. A study of female students attending the Governor's schools (Howard-Hamilton & Robinson, 1991) concluded that these young women demonstrated androgynous characteristics. The characteristics listed which are usually

more evident among males were: self-reliance, independence, leadership, dominance, and willingness to take a stand.

Hollinger and Fleming (1993) called for an abandoning of the emphasis on sex and gender differences. They appeal for a refocusing on within gender differences (p. 157). They promote both the ideas of study within gender limits and a lifespan approach to the study of gifted women. As this literature review demonstrates, the most recent studies seem to be focusing on gifted women only, instead of studying both sexes simultaneously and looking for differences.

Longitudinal focus

In a recent edition of Roeper Review, the guest editors (Subotnik & Arnold, 1993) called for a change in direction in gifted educational research from cross-sectional studies to longitudinal studies. Longitudinal studies such as those published by Terman and Oden provide a bounty of information as evidenced by these early studies and by the number of reanalysis studies on the original data sets. Sally Reis (1991) believed there is still a need to analyze the effects of cultural, societal and environmental factors as well as the personal and socialization variables to ascertain which ones negatively affect gifted girls. She also called for longitudinal /developmental studies of boys and girls in order to establish the times of life that the various blocks have an impact.

An example of longitudinal research is the Project CHOICE studies cited earlier in this paper. Project CHOICE was a 14 week course of career development that was given to gifted adolescent girls in 1977-78 in an attempt to identify the barriers that prevent these girls from achieving up to their potential. There have been several follow-up studies of the participants (Hollinger & Fleming, 1984, 1988, 1992, 1993). The early work measured some of the personality variables of the gifted and talented subjects, identified their career aspirations, and examined the external and internal barriers to their achievement.

Another longitudinal study recently published was the study of gifted students educated at a New York elementary school based on the principles of Leta Stetter Hollingworth (Subotnik, Summers, Kassan, & Wasser, 1993). The purpose of the study was to measure whether these women lived up to what was perceived as their potential when they were identified as gifted in childhood. The students for the school were selected on the basis of high IQ as well as having personality and motivational characteristics conducive to high achievement. Their family backgrounds included fathers who were usually professionals and mothers who were professionals or homemakers. As girls, the subjects reported a love for reading and a heightened sense of being different from other children. An interesting facet to this study was that the school was run by a staff of female administrators, a factor that would serve to reduce the overt sexual bias often found in schools. The productivity of the subjects as adults was compared to that of Terman's subjects. They expressed higher satisfaction and success values than the latter. Forty percent of the women either held a Ph.D., LL.B., J. D., or M.D. degree. There were no "superstars" in the group and various explanations are given for this deficiency. They may have not felt the need to prove themselves, having already been identified as gifted, or they may have even deliberately tried to avoid eminence.

The advantages of and the need for longitudinal studies in the area of gifted education are indisputable facts. Clearly, changing environmental factors directly affect the career and motivation of gifted girls. Longitudinal studies are labor intensive: they require enormous investments in time and resources. These methodological disadvantages are usually offset by the fact that the data can be subjected to secondary analyses for years to come.

Family factors and childhood correlates of eminence

Attempts at identification of the gifted have been of two types: the prospective and the retrospective. Prospective methods involve the prediction of potential for future prominence and began after the development of psychometric testing became common

practice. Retrospective methods include the study of geniuses or observations of outstanding people. We are still as inefficient at identifying children who will attain future prominence as we were in Terman's day. Terman and Hollingworth identified their subjects on the basis of IQ testing and teacher nominations which are still used extensively, and almost exclusively by some jurisdictions today.

The importance of the family was first pointed out by Freud. The psychodynamic approach was augmented by the work of Galton and other hereditarians who emphasized genetic factors predisposing certain individuals to success. Some of the early work portrayed negative aspects of a family as somehow contributing to the achievement of the individual, perhaps by increasing the motivation and drive needed to be successful. Early studies of genius, eminence, and gifted individuals focused on adult males who were not usually Canadians (Galton, 1869; Goertzel & Goertzel, 1962; Roe, 1983; Terman & Oden, 1959).

Some of the early studies of eminence contributed some interesting findings about childhood factors; however, the subjects were usually all male. Sibling position, family size, age of the parents, and other variables in the structure of the family have been studied extensively. A summary of the findings for these variables will be given and the studies that deal specifically with families of eminent women will be discussed in a later section.

Many of the early studies of eminence referred to the birth order of the subjects. Firstborns were found to be overrepresented in these studies. Eminent males are often first or only sons (Albert, 1983; Cox, 1983; Roe, 1983; Terman & Oden, 1959). Ernst and Angst (1983) pointed out that control groups were not used in these studies. The importance of background variables in the family is related to social class in their study. They found no evidence that firstborns were more likely to be creative, organized, task-oriented or overachieving. They looked instead to sibship size and socio-economic classes to account for the differences seen between firstborns and laterborns. These

authors question whether the differences that show are due to differential socialization or genetic vulnerability, but concede that birth order may be important for certain individuals.

The results from studies of the parents of the eminent indicate that they had their children relatively late in life (Albert, 1980; Terman & Oden, 1959; Silverman, 1989). Older parents may have more stable careers, more financial resources, and be better able to develop the talents of their bright children. Bloom found that the parents of the highly talented had high energy level and high achievement orientation. Often the parents encouraged their children in their own area of expertise. (Albert, 1983; Bloom, 1985).

Terman concluded that gifted children most often came from families who had superior intellectual and physical endowment. In 1926, Cox selected 300 highly eminent individuals to study, based on their later achievements and not on their intelligence as Terman did. She identified as childhood mental traits for these geniuses: ambition, persistence, intellectual energy, and originality. The background correlates were higher than average environmental and hereditary resources, precocious intellectual accomplishments, and high motivation, confidence, and strength of character. McCurdy (1983) studied the family background of twenty of the highly eminent men on Cox's list. One of the findings was that eminent-to-be children received more parental or adult attention than average children did. They were given abundant love and intensive educations. They tended to have been isolated from other children and they had rich fantasy lives.

In 1951, Anne Roe pointed out that hard work was a necessary component of achieving eminence in a field in addition to intelligence. The family that produces the eminent person was described as valuing work and the children were characterized by feelings of being apart from others. She noted a high incidence of parental deaths, childhood illness, and social isolation from peers among her subjects. Her subjects

were most often firstborns. "Many eminent persons do not have close or stable relationships with their parents, or their parents with one another, a factor more apparent for persons achieving eminence in non-scientific fields than for those eminent in the sciences. A complicated, tense parent-child relationship helps the eminent-to-be person learn how to cope with tensions, complexity, and a sense of being quite special to usually one, but sometimes both parents" (Albert, 1983, p. 27).

A study of 38 contemporary highly gifted children who scored above 170 on the Stanford-Binet by Silverman and Kearney (1989) showed that the sex ratio was similar with 17 girls and 21 boys. Of the seven most highly gifted who scored in the 190 range and above, six were girls and one was a boy. These gifted children were mostly firstborn children in families that ranged in size from one to six children. Three children who were in later birth positions had been raised, in some respects, like only children because their siblings were older children from a previous marriage. Their findings regarding the parents of the gifted showed that they were from middle and upper socioeconomic backgrounds and were well-educated. They held high expectations for their children, read a lot, and modelled a need to seek knowledge. The impact of having a highly gifted child on the parents and on the homelife suggested that these families had special needs.

The concept of an achiever being "special" within the family structure was presented by Albert (1980) and Bloom (1985). Albert found that 90% of the political leaders he studied and 74% of the Nobel prize winners were considered to be special in their families. The "specialness" was derived from being in a particular birth position, or due to the death of a sibling or parent. Albert attempted to show that birth order aligns the child into selected family experiences and social relationships. He pointed to a relationship between birth order and certain developmental outcomes because birth order determines the orientation of the individuals to each other and the role each will play within the family.

When a child's talent or gift fit in with the family values and traditions, this specialness combines with birth order to create a situation of intense family socialization. "Therefore, functioning as it does, a family operates as a selective experience-producing, experience-selecting agent motivated towards achieving specific developmental outcomes for its members" (Albert, 1980, p. 88). Albert further contends that a death in the family or another traumatic event can place the child in the "special" position. Of all the eminent scientists studied by Roe, 76% would fit into the "special" category as defined by Albert. "At the least such an experience as early parental death appears to give drive and focus to many a child's giftedness and family emphases" (Albert, 1980, p. 90). The impact of family death may have the psychological significance of promoting earlier maturity or independence.

Bloom (1985), in his study of the characteristics of 120 accomplished individuals, found that early home learning played a significant role in the development of talent. Bloom's subjects, who were pianists, sculptors, mathematicians, neurologists, swimmers, and tennis champions, reported being special in their families because of their talent areas. The specialness, while not explicitly stated by the parents, was more of a continuous commitment to advancement of their ability or talent. "Although most of the families did not foresee the great costs and sacrifices necessary for talent development over the many years, their view of the child as special motivated them to do whatever was necessary to help the child at each step in the process" (Bloom, 1985, p. 542).

A study comparing the family environments of achieving and non-achieving gifted children was done using a sample of 22 students being treated at the Family Achievement Clinic (Rimm & Lowe, 1988). It consisted of the total enrolment of the girls (5) and a random sample of the boys (17). The parent-child relationships were more often bad among underachievers. The study provides some interesting contrasts to the research into the families of the eminent as described in the literature. The family

sizes and birth order were similar. The parenting style within the families of the underachievers was usually liberal in the early days and then inconsistent later on. Although 82% of the underachievers were described as being "special" in the family, many were later depowered for some reason and their specialness was lost. Rimm and Lowe concluded that early attention may cause a dependence on positive reinforcement, and that consistency in parenting is more important in families than the actual parenting style.

Studies of the family of origin for eminent females

There is a fear amongst all gifted educators that the more we seek to prove differences between the sexes, the more we negatively affect the potential of girls because we have pointed out their inadequacies in an educational system that is set up to accommodate the learning styles of boys. Differences between those women who manage to achieve in today's society and those who become "invisible" may be more revealing of the determining factors and barriers.

Gifted women are society's adult underachievers. Nevertheless, some women from a variety of backgrounds, most of whom have been exposed to internal and external barriers, do manage to survive adolescence with their giftedness intact and become outstanding in their field. There has been a return to the study of background or childhood factors in those who have become eminent or who have proved to be high achievers.

Most of the early studies were studies of eminent males. Later studies of eminence did include some female subjects. Goerzel and Goertzel (1962) studied 400 eminent people of which only 52 were female. The families of these people, the "cradles of eminence," were described as not being placid atmospheres. The fathers and mothers were characterized as dominating and having a strong drive toward creative or intellectual achievement.

Helson (1971) studied the creative personality of 45 American female mathematicians who had a Ph.D. in Mathematics. On the basis of an average of three ratings of their creativity by their peers, the subjects were divided into a creative group and a comparison group. The personality, research style, and backgrounds of the two groups were described and compared to the results of a companion study of creative male mathematicians. "Whereas more creative than comparison men mathematicians had been eldest children, what tended to distinguish the creative women in sibling relationships was that very few had a brother" (Helson, 1971, p. 97). The fathers were the dominant parents in the families and the families had strong intellectual and cultural values. The creative women had significantly more identification with their fathers than did the comparison group.

Hennig (1973) studied the family background of 25 female executives who were presidents or vice-presidents of nationally recognized business firms. This author stated that most women are negatively affected by the double bind placed by society on high ability women. If they fail to achieve they are not living up to their standards of performance; if they do achieve, they are not living up to society's expectation of the feminine role. In her search for the reasons why her sample was able to maintain their achievement motivation, Hennig looked to the childhood family for her explanations. Every subject in her sample was firstborn in a small, all-girl family. The family relationships were warm and secure. The parents valued the girl for her femaleness and for her achievement. The parents were attentive and supportive, and the girls were allowed to experience an instrumental lifestyle at an early age.

The underlying reason for the dearth of studies on eminent women is that there are relatively few eminent women. Ochse (1991) examined the reasons for the under representation of women in studies of eminent creators. Like some of the previous work, her results showed that the homes of creative achievers were emotionally lacking,

but high in opportunity and encouragement. Her main finding was that women have strong needs for social intimacy that impede their drive to create.

Kerr (1985) focused on the life stories of seven eminent women: Maya Angelou, Marie Curie, Georgia O'Keeffe, Margaret Mead, Eleanor Roosevelt, Beverly Sills, and Gertrude Stein. In describing these gifted women, several contradictory commonalities were presented. They all spent much time alone, a factor which Kerr related to their common experience of feeling different or special. The women studied had been voracious readers in their childhood and many had suffered difficult adolescence. She pointed to individualized instruction as one of the variables in the childhood background of these eminent women. These factors were also related to the development of what she termed "thorns" or "shells" that served to protect or insulate the self from the feelings of others. Some had the good fortune of having a mentor to help them avoid career barriers. As young girls, they had learned to be responsible for themselves and had refused to accept the stereotyped limitations on their gender. They experienced a separateness or had the ability to avoid confluence with others. Each woman demonstrated the ability to fall in love with an idea and they had often established a relationship with another person who was interested in the same field of work.

Kerr made some specific references to the childhood background of the women studied. The gifted girls were more active than other girls. Because they were interested in the same activities that boys were, like adventurous play, scientific topics, and computer games, they preferred the company of boys rather than that of other girls. The girls were more sensitive and demonstrated excellent social knowledge. No typical family patterns emerged from her study. There seemed to be no relationship to birth order or whether or not the mothers worked outside the home. The gifted girls had common positive academic experiences in which they outperformed gifted boys and all other girls in their schoolwork. "Gifted girls are interested in school achievement and seem to meet their need for self-esteem through their achievements" (p. 94).

Studies that pertain to Canadians are very scarce. Carisse (1976) undertook a study of 149 successful French-Canadian women and discovered that they came from families with higher than average intellectual and material resources. Other studies referring to eminent Canadian women were published by Froggatt and Hunter (1980), Solomon (1990), and Yewchuk, Chatterton, and Jackson (1990).

Froggatt and Hunter (1980) studied 40 Canadian women, 21 of whom had highly visible public profiles. They were compared to 19 other subjects who were successful but not as prominent. The family was mentioned as the base for their self-image by these successful Canadian women. At least two-thirds of the subjects were eldest in their families. The majority identified with their mothers. Half of them said their father treated them as special and half reported having a poor relationship with their fathers. A supportive family network was described by one half of the respondents.

Solomon (1990) undertook a qualitative analysis of the characteristics of nine eminent Canadian women that emerged during interviews with each of them. In an effort to compare her results with those family characteristics found in the literature describing the homes of eminent men, she listed the following characteristics: higher than average economic status, higher than average intellectual resources, special focus of one parent, and the ability to mobilize the environment. Fathers were seen as self-involved and problem-prone; mothers were dominant, driving, and ambitious. The personal characteristics of the women surveyed included the following descriptions: hardworking, highly intelligent, well-adjusted, creative, early mastery of material, and being early readers.

Yewchuk, Chatterton, and Jackson (1990) published a study of the demographic variables pertaining to 827 eminent Canadian women. These highly successful women were compared as to their age, religious affiliation, employment status, net income, marital status, number of children, as well as their child care and home management arrangements. Their educational levels and income levels were compared with those of

their parents. Country of origin was also investigated for the parents and these eminent women.

Because this study is the predecessor to the present one, some of the findings that relate to the family of origin are included in Appendix B. Most of the subjects were extremely well-educated and 78% of them were employed full-time. As a group, they had a higher income range than the top 10% of female incomes in Canada as reported by Labour Canada, 1986. Most of these women were married, but married later than their peers. Only 55% of them responded to questions about children. Most of those respondents who reported a religious affiliation were Protestant. The usual perception of their parents' income was that it was in the middle income range; however, more of these women came from lower income families than from high income families. Their parents were reported to have an educational level above the average for their generation.

Summary and statement of the problem

The literature review contributed to the development of the hypothesis and the research questions that were used to elaborate the hypothesis. Emerging from the literature, the image of a family that would facilitate the development of giftedness was a vague composite of relationships and structures. There was, however, a suggestion that a cluster of experiences within the family is associated with the attainment of eminence in adulthood. The composition of the family, the climate within the home, and the attitudes towards the interests and prospects of the children all affect their future achievement and success.

Birth order, sibship composition, parental characteristics, absence of a parent, separation from peers, and being "special" within the family are all influences that have been associated with the attainment of eminence. This study will describe the families of eminent Canadian women with a view to seeking out empirical evidence for the existence of these influences. With a large sample size certain patterns in family

structure, climate, or dynamics might emerge to confirm that the early influences pointed out by the authors reviewed did impact eminent Canadian women.

Many of those who have studied exceptional achievers refer to them as occupying a special place within their family (Albert, 1980, 1983; Bloom, 1985; Hennig, 1973; Rimm & Lowe, 1988). The concept of the eminent-to-be as having a "special" position or role within the dynamics of the family is one that I believe coincides with the developmental approach to the psychology of females. Girls value their relationships with others and learn their roles in early childhood within the family of origin. My idea is that achievement motivation and self-esteem would be enhanced if girls were valued within their families for those behaviors that contribute to career success. The problem is to establish the eminent woman's place within the family structure and the family climate in which she was raised.

The hypothesis is that eminent Canadian women as girls occupied some special position within the family composition, climate, or dynamics that enhanced their achievement and promoted their subsequent renown. The research questions are:

1. What was the composition of the family of origin for the eminent Canadian women sampled?
2. How did Canadian women who have achieved eminence perceive the climate of the childhood home?
3. What were the special roles and interests that comprised the position of the eminent-to-be within the dynamics of the family?

Subjects

This is a follow-up study of Canadian women who have achieved eminence in their particular field of endeavor. Yewchuk, Chatterton, and Jackson (1990) surveyed the women listed in the Who's Who of Canadian Women (Pasternak, 1986) using a questionnaire called "Eminent Women Survey." Of their 827 respondents, 430 indicated that they would be willing to supply further information to the researchers. This group of willing participants was targeted for the present study. The number of respondents for the present study was 197 which represents a 46% response rate.

This sample closely resembles the sample in the previous study despite the two-year time span between the two surveys. Tables comparing the frequencies for age distribution, sibling position, and family size for the two samples are included in Appendix B. The breakdown of the sample according to the position of the eminent-to-be within the family of origin is remarkably similar.

The subjects for this study ranged in age from 29 to 89 and the average age of the respondents was 48.0 years. The modal age was 42 and the median was 46 years with a standard deviation of 10.8. The age of the respondents for the previous study was obtained only in age categories. Table B-1 shows a comparison of the subjects for the two samples by the age categories that were reported in the previous study. The frequencies and percentages for each category are given.

Table B-2 provides a breakdown of the families for the two samples based on the number of children in the sibling sets. The sibship size varied from 1 to 13 in the original study and from 1 to 11 in the present sample. The average number of children in the first sample was 3.24 and the average number for this sample is 3.15.

The comparison of the sibling positions of the eminent women sampled in the two studies is included in Table B-3. In both samples approximately one-half of the women

were first born and about one quarter were second born. About 4% of both samples were from families of 5 or more children.

The subjects in the present sample are similar in average age, the distribution according to sibling position, and mean family size to those in the original sample. This sample is considered to be representative of the original group on the basis of these comparisons.

Instrument

The questions used in this analysis were taken from a questionnaire called "A Survey of Childhood Backgrounds of Eminent Women" which was developed by Sharron Chatterton and mailed out to 430 women in early 1989. The pertinent questions from the survey for each of the research questions are included in Appendix A. The variables analyzed are listed under the relevant items from the instrument.

Procedure

The 197 responses to the questionnaire were analyzed in order to ascertain the position of the eminent woman in her family using a statistical package called SPSSx. In the first stage of this analysis the responses to the research questions were tabulated and descriptive statistics including frequencies and percentages were calculated for all the variables pertinent to each question. This first step was developed in order to discern commonalties among the subjects regarding the structure, climate, and dynamics within their families.

Within each of these major categories of study there were several variables studied (See Table 3-1). The first research question involved providing a description of the composition or structure of the childhood family. Parental ages, birth order, sibship size, sibling differences in renown, sex, and age were analyzed for this category. The second research question concerned the climate of the home. This category included the following variables: parental style, parental marital status, absence or loss of a parent, isolation from siblings, and naming the most influential person. The third research

question explored the role and interests of the eminent-to-be within the family dynamics. The variables included their perception of being "special," indicators of specialness, their role within the family, the roles of their siblings, the intensity of their interests, and the continuation of their interests into adulthood.

Table 3-1

The Organization of the Variables within the Categories of the Three Research Questions

Family Composition	Family Climate	Family Dynamics
Age of the father	Influential person	Perception of being special
Age of the mother	Parental style	Indicators of specialness
Birth order	Parental marital status	Role within the family
Sibship size	Parental absence	Role of the siblings
Age difference	Parental loss	Intensity of interests
Sex of siblings	Problem of a sibling	Continuity of interest
Eminence of siblings	Separation from children	

The second stage of the statistical analysis involved searching for relationships between the perception of being "special" with the other variables that were established as being descriptive in the first level of analysis. Associations that were found to be significant were reported in the form of chi-square statistics. The .05 level of significance was used in determining the significance of the findings.

The third stage was concerned with discovering differences among the subjects because of the large age spread among them. Cohort analyses were performed based on whether the woman was born prior to World War II, during World War II, or after World War II. The continuous variables were statistically analyzed using one way analysis of variance. The coded variables were analyzed using chi-square statistics.

Research hypothesis, questions, and descriptions of the variables

The hypothesis is that eminent Canadian women as girls had some special position within the family composition, climate, or dynamics that enhanced their achievement and promoted their subsequent renown. There are three research questions associated with this hypothesis. These three questions are listed with a description of the variables pertinent to each one.

Research Question 1. What was the composition of the family of origin for the eminent Canadian women sampled?

- Age of the parents: age of the mother and father (or guardians, if applicable) at the birth of the subject.
- Birth order: the position of the girl in the family with firstborn being the oldest child, and laterborn including the other birth positions from the second oldest to the youngest.
- Sibship size: the total number of children within the family including the subject.
- Age difference: the difference in age between the subject and her next older sibling (for subjects other than firstborns).
- Sex of siblings: the number of brothers and sisters reported by the subject.
- Eminence of siblings: the number of siblings judged by the respondent to have achieved success or renown equal to that of her own.

Research Question 2. How did Canadian women who have achieved eminence perceive the climate of the childhood home?

- Influential person: the person who was most nurturant, protective, or influential during the subject's childhood.
- Parental style: rating the family as matriarchal, patriarchal, partnership, or egalitarian based on the person(s) doing the deciding, ruling or influencing.
- Parental marital status: incidence rates of separation, divorce, and desertion.
- Parental absence: the absence of father, mother, or both parents.

- Parental loss: the death of father, mother, or both parents.
- Problem of a sibling: number of siblings who had a severe illness, were handicapped, or died.
- Separation from other children: the number who were separated from other children during their childhood.

Research Question 3. What were the special roles and interests that comprised the position of the eminent-to-be within the dynamics of the family?

- Perception of being special: stating why they were considered to be special within their family.
- Indicators of specialness: how the family members showed they were special.
- Role within the family: the number who had a special role or epithet.
- Role of the siblings: whether a brother or sister who was either older or younger was considered "special".
- Intensity of interests: the number of subjects who indicated that one of their childhood interests or hobbies could be called a "passion."
- Continuity of interest: how their childhood passion influenced or emerged in their adult life.

There were three levels of analysis. The first level of analysis consisted of tabulating the responses to the research questions in order to discern commonalties among the family variables. The second level of analysis involved establishing relationships between the perception of being "special" and the other variables established as being descriptive in the first analysis. The third level of analysis involved a birth cohort analysis in order to discern differences among the family variables for women born in different historical periods. These three analyses of results are discussed separately.

First level of analysis

The first level of analysis consisted of a descriptive summation of the responses from the 197 subjects by tabulating the frequencies for each variable and calculating percentages. The family information was organized according to the demographics of the family of origin, the climate of the home, and the special place that the eminent woman perceived herself to hold within the dynamics of her family (See Table 3-1). The results of this level of analysis are arranged according to the research questions with a separate report of the findings for each of the variables.

Research Question 1. What was the composition of the family of origin for the eminent Canadian women sampled?

Age of the parents

The ages for the parents were tabulated and the statistics for central tendency were calculated. The oldest mother was 43 and the youngest was only 17 when the subject was born. The fathers ranged in age from a maximum of 50 to a minimum of 21 years. Table 4-1 presents the ages of the mothers and the fathers divided into specific age categories and the relative frequencies of each category.

Table 4-1

Frequencies and Percentages of Mothers and Fathers in Various Age Categories

Age category	Mothers		Fathers	
	n	%	n	%
17 - 21	15	7.6	2	1.0
22 - 26	72	36.5	42	21.3
27 - 31	47	23.9	50	25.4
32 - 36	34	17.3	42	21.3
37 - 41	21	10.7	32	16.2
42 - 46	4	2.0	17	8.6
47 - 51	0	0	5	2.5
Missing	4	2.0	7	3.6
Mean	28.6		32.5	
Mode	26.0		29.0	
Median	28.0		32.0	
Standard deviation	5.8		6.8	

Note. N=197

The results for this study are consistent with the results of other studies (Albert, 1980; Silverman & Kearney, 1989; Terman & Oden, 1959). Silverman and Kearney (1989) report 29.6 years as the mean age of the mothers at the birth of their

extraordinarily gifted child. The fathers of the gifted children in Terman's sample had a mean age of 33.6, and the average age of the mothers was 29.0 years. The corresponding mean ages of the parents in this sample are 32.5 and 28.6. Prior to the 1970s in Canada, women in the 20-24 age group were the prime child-bearing group (Statistics Canada, 1991).

Birth order

The birth order of the eminent women was analyzed. Figure 4-1 shows the relative frequencies of their sibling position within the family. The majority (52.3%) were firstborn children. Approximately one quarter (24.9%) were in the second birth position.

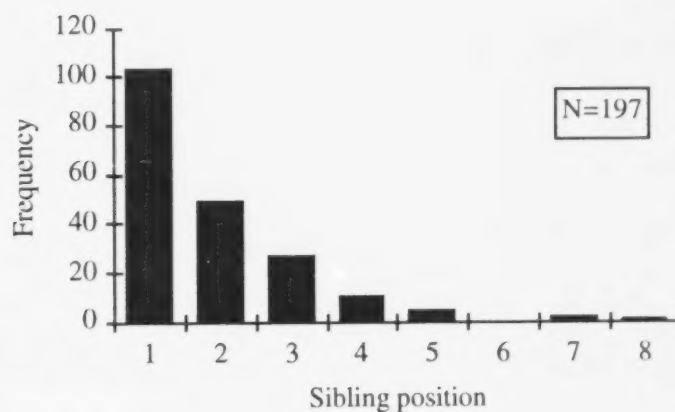


Figure 4-1

The numbers of eminent women in each of the ordinal birth positions within their families of origin

Albert (1980) believed that birth order is an underlying factor in eminence as it predisposes the child to certain interactions and experiences within the family structure. Albert stated that being firstborn means the child receives the most intense socialization in the traditions and interests of the family. On the other hand, Ernst and Angst (1983) felt that sibship size is more important than birth order.

In their study of the highly gifted, Silverman and Kearney (1989) found that most of the children identified as such were firstborns and that one-fifth of them were second born. Eight of the 38 studied were only children and 19 were firstborns with siblings. In addition, they found that three other children, who were in the third, fourth, and sixth positions in families, were actually raised as firstborns because their siblings were older children from a previous marriage.

Eminent men are often the firstborn in their families. Anne Roe's (1983) work on eminent scientists revealed that 72% were firstborn or only sons. In the work by Cox (1983), one half were in the first sibling position. In Albert's (1980) study, 63% were the first or only sons.

Sibling position is one of the variables in which the findings for eminent women resemble those for eminent men. The successful women executives studied by Hennig (1973) were all firstborns, either the only child or the eldest in an all-girl family. Froggatt and Hunter (1980) found that at least two thirds of their sample were firstborns and 10% were only children. In the previous study, Yewchuk et al. (1990) found that almost half (48.7%) were firstborn and 11.2% were only children. The findings of the present study are that 52.3% of this sample were first children and 14.7% of the women were only children. As all the findings have indicated, being firstborn in the family is often a descriptor of the eminent male or female.

Sibship size

The size of the sibling set was computed from the data. The average size of the sibship was 3.15 children. Some (14.7%) of this sample of eminent women were only children. The majority were from small families; 85% of the families had 4 or fewer children. Figure 4-2 shows the distribution of the various sibship sizes as reported by the sample group.

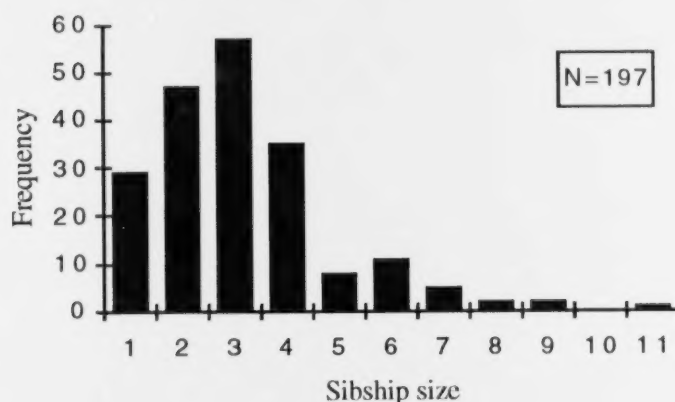


Figure 4-2

The frequencies of families with various sizes of sibship according to the number of children in the family

The early studies of eminence pointed to family size as being relatively small for the decades in which the individual was born. The most typical family size found by Olszewski et al. (1987) was a two-child family. The findings for sibship size for this study show the full range varying from 1 to 11 children.

Instead of concluding that small families may also be conducive to the development of eminence as the previous studies have done, the present author points out that the pattern resembles a normal distribution of family sizes. When the sibship sizes of 5 or more are grouped together as very large families and this group is compared to the very small family size of one child, the corresponding frequencies are the same. Twenty-nine of the subjects were only children and another twenty-nine came from very large families. These respondents were equally likely to have come from very large families of 5 or more as to be only children.

Age difference between the subject and the next oldest sibling

The age difference of the subject from that of the next oldest sibling was calculated for those who were not reported in the first birth position. Table 4-2 presents the frequencies for the various age differences and the percentages of those not in the first birth position reporting the age difference.

As shown in Figure 4-1, there were 103 respondents who were in the first birth position. In addition, two respondents were twins and both of these reported that they were the second born in a twin set that was the first childbirth for their mother. No date of birth was provided by one of these twin sets and statistics for their ages are missing but they have been included in the group with no age difference. The group in Table 4-2 with no age difference includes the twins as well as the firstborns.

There were only 94 respondents who were in later birth positions; many of these reported large age spans between them and the next oldest sibling. Twenty-three of these respondents were 5 or more years younger than the next oldest sibling. This was a very large proportion (24.5%) of the eminent women who were not firstborns. Large age differences may suggest that these girls held a position similar to that of being the firstborn within the family.

Table 4-2

The Frequencies and Percentages of Subjects Reporting Specific Age Differences between Themselves and the Next Oldest Sibling

Age difference in years	Frequency of response	
	n	%
0	105	53.3
1	11	5.6
2	28	14.2
3	17	8.6
4	11	5.6
5	7	3.6
6	4	2.0
7	4	2.0
9	1	0.5
10	4	2.0
11	2	1.0
14	1	0.5
Missing	2	1.0
Total	197	100.0

Ernst and Angst (1983) stated that sibship size and birth order have a negative impact on intelligence only if the spacing interval between the children is small. Close

spacing has been associated with lower academic achievement (Olszewski et al., 1987).

The other studies of eminence did not usually specify the age spacing among the sibship. Spacing within a family is an area of interest that requires much more research.

Those girls who reported spaces of five years or more between themselves and the next oldest sibling were recategorized into a special group for the second and third levels of analysis in order to search for significance with the perception of being special within the family and for differences among the cohort groups, as will be reported below.

Sex of the siblings

The composition of the sibling set as to the gender of the children was analyzed. Table 4-3 provides a breakdown of the sibship according to the number of sisters and the number of brothers reported by the subjects.

Table 4-3

Frequencies and Percentages of Sisters and Brothers within the Sibship

Number within sibship	Sisters		Brothers	
	n	%	n	%
0	70	35.5	72	36.5
1	71	36.0	68	34.5
2	40	20.3	36	18.3
3	12	6.1	12	6.1
4	3	1.5	5	2.5
5 or more	1	0.5	4	2.0
Total	197	100.0	197	100.0

Although over a third of these subjects did not have any male siblings, most of the respondents did have brothers. These findings are interesting when they are compared with the results of Helson (1971) whose subjects usually did not have a brother and Hennig (1973) whose total sample was from all-girl families. In this study not only did the respondents often have a brother, 28.9% had more than one brother. The difference in the findings may be due to the larger sample size used in the present study and the variety of sibship sizes included in this study. The larger the family, the more probable it is that the girl has a brother.

Eminence of the siblings

Most of the eminent Canadian women studied (78.2%) reported that they were the only eminent persons in their sibling set. Approximately one fifth of them judged that their brothers or sisters had achieved a level of renown equal to their own. Of the 43 who affirmed that others in their family, besides themselves, had attained eminence, 31 reported having one eminent sibling, and 12 believed that more than one of their siblings was eminent.

The eminence of the first sibling in all 197 of the families was very high at 62.9%. Fifteen reported that they had a brother in the first birth position who became eminent, and six reported a sister in the first birth position as being eminent. This finding is further evidence of the link between birth position and eminence. It must be remembered, however, that those sampled were often in the first birth position themselves and the sample is entirely composed of eminent persons.

Giftedness has been shown to run in families (Silverman & Kearney, 1989). Galton (1869) and other hereditarians including Terman (1959) believed that certain families are fertile environments for the production of genius or creative abilities. Albert (1983) pointed out that it is a mistaken idea that a family can only tolerate one of its members to be highly creative. The proportion of women who believed in the eminence

of their siblings in this study may provide evidence of the link between giftedness and families purported by other authors.

Summary

The composition of the families of origin for eminent Canadian women showed several similarities. The modal family size was composed of a sibship of three children. Siblings of the eminent-to-be were both brothers and sisters, and the breakdown of the sibship according to sex was approximately the same. Although approximately one-fifth of the subjects believed that at least one of their siblings had achieved renown equal to their own, most reported that they were the only eminent persons in their sibship.

The average age of the mother was 28.6 years and the average age of the father was 32.5 years at the birth of the eminent-to-be. The eminent-to-be was usually the firstborn child in the sibship. A high proportion of those subjects not in the first ordinal birth position had a large age difference between them and the next oldest sibling.

Research Question 2. How did Canadian women who have achieved eminence perceive the climate of the childhood home?

Influential person

When the respondents were asked to name the person who "really" raised them, most of them gave their mother, or both parents. The breakdown of the responses is shown in Table 4-4.

Table 4-4

Frequencies and Percentages of Respondents Reporting the Person Who "Really" Raised Them

Person named	Frequency of response	
	n	%
Mother	95	48.2
Father	23	11.7
Both mother and father	49	24.9
Grandparent	10	5.1
Sibling	3	1.5
Relative	5	2.5
Non-relative	6	3.0
Other	4	2.0
No response	2	1.0
Total	197	100.0

The role of the father in the development of the gifted girl has been a debated one. Several of the earlier works (Callahan, 1979) indicated that a close relationship with the father was necessary for a girl to become a high achiever. Froggatt and Hunter (1980) reported that half of their sample group had poor relationships with their fathers. The female mathematicians studied by Helson (1971) indicated that their fathers were highly influential in their lives.

Parental style

The subjects were asked which parent was most influential, did the deciding, or was the ruler in their home. Table 4-5 indicates the choices with the frequencies and percentages for each type of response.

Table 4-5

The Parental Style of the Childhood Home of the Eminent Based on the Frequencies and Percentages Reported

Parental style	Frequency of response	
	n	%
Matriarchal	67	34.0
Patriarchal	50	25.4
Partnership	69	35.0
Egalitarian	5	2.5
Other	5	2.5
No response	1	0.5
Total	197	100.0

The eminent perceived the style of their parental home as usually being matriarchal or as a partnership of the two parents. This finding is interesting when it is combined with the other findings related to the climate within the home. The strong influence of the mother is clearly portrayed. These results would fit in with the findings of Hay and Bakken (1991) who found that the most likely adult role model for gifted girls is their mother.

Parental marital status

The climate of the family was also analyzed based on the number of respondents who reported that their parents had experienced a marital breakdown. Most of the eminent women (86.3%) did not respond to this question and their non-response was taken to mean that their parents' marriage was stable.

Twenty-seven of the respondents (13.7%) reported that their parents had been separated or divorced or that their father had deserted them. Thirteen subjects reported that their parents were divorced. Those who had been separated totalled 12 and there were 2 instances of desertion. The marital problem occurred during the preschool years for 5 of the 27 reporting, and under the age of 16 for 14 of the subjects.

The marital status of the parents affects children growing up in a disrupted home. "If any type of parental loss appears in the literature as developmental debilitation, it is parental loss through separation, divorce, or extreme passivity" (Albert, 1983, p. 152). The divorce rate for the parents of the gifted children in Terman's (1959) study was 5.2% and the rate of parental separation was 1.9%. The corresponding divorce and separation rates for the present study are very consistent at 6.6% and 1.0%.

Parental absence

A large number of these women reported loss of or separation from their parents. Parental absence was reported by 78 women or 39.6% of the sample. Fifty-seven women reported absence of the father, 11 said that their mothers were absent, and 10 stated that both of their parents were absent. The most common reasons given for the

parent being absent were due to occupational demands ($n=32$) and because of one of the world wars ($n=24$). The parental absences usually took place during their elementary school years from the ages of 6 to 12.

There are, then, a large number of eminent women who were raised in a home without a father. This finding is perhaps reflected in the high proportion of homes previously described as matriarchal. It raises questions about the dominance of the father which was reported by Helson (1971) and the importance of the father-daughter relationship as described by Callahan (1979).

Parental loss

A total of 55 respondents reported the loss of parents, but most of these losses took place in the woman's late teens or adulthood. Loss of a parent referred to the death of their mother, father or both parents. Death of a parent while the child was under 16 years of age was reported by only 12 (6.1%) of the women. Nine of them lost their fathers and three lost their mothers during their childhood.

Albert (1983) quotes 8% as the average rate of the population who experience early parental death. The findings of the studies of eminent men show that their subjects suffered the loss of a parent in their early childhood at frequencies exceeding the average rate. Anne Roe (1983) reported high occurrence of early parental deaths in the families of eminent men. Terman's (1959) gifted children suffered a 16% rate of parental death.

Albert (1980) pointed to a very high rate of parental loss, about 28%. "Early parental death by itself is not cognitively damaging" (Albert, 1983, p. 152). In discussing the way in which parental death affects development, he cites a study that found that females react in an opposite manner to males. Males who experienced loss of a parent through death had significant decreases in their affiliation and achievement motivation and increases in their power motivation. The impact of parental death on females may increase their need for affiliation.

Problem of a sibling

Some of the girls were affected by a problem that was suffered by one of their siblings. Of the total sample, 39 (19.8%) reported their brother or sister either died, suffered a severe illness, or was handicapped. Most of these conditions were during the childhood of the eminent-to-be. Nineteen of the women (9.6%) had siblings who died.

This was a sizable number of the sample who suffered a traumatic event within the family environment. Much of the parents' time and energy was likely focused on the sibling who was afflicted rather than the eminent-to-be. Albert (1983) suggested that the unpredictable death of an older brother or of a parent by age 16 often put his subjects in a special position within the family. Ninety percent of the presidents he studied and 74% of the Nobel Prize winners were in "special" positions within their families when the deaths of siblings and parents were included in the numbers.

Separation from other children

Separation from other children was reported by 38 (19.3%) of the women. The most common reasons cited were due to their own illness (n=10) or due to the geography of the region in which their family home was situated (n=10). They were most often separated from other children during their elementary school years, from ages 6 to 12.

Isolation from other children is another variable that has been consistently reported in the literature (Kerr, 1985; McCurdy, 1983; Roe, 1983). All three groups of scientists in Roe's study (1983) showed much social isolation from peers and there was a high incidence of childhood illness. In this study nearly one-fifth indicated that they had been separated from other children during their childhood. This is a high incidence of isolation of the eminent-to-be, and this coincides with the work of the Kerr (1985) who believed that isolation enabled the girl to pursue her interests and develop her talents.

Summary

The environment or climate within the home is important to the development of the personality and abilities that enable girls to achieve and be successful. Most of the homes for this sample were stable with few instances of divorce, separation, and desertion. Fewer subjects experienced the death of a parent in their childhood than in other studies. Despite the low statistics for marital disruptions, there were high incidences of parental absence, sibling problems, and separation from other children.

As pointed out by Leta Stetter Hollingworth, the first 12 years of a girl's life are crucial to the development of her giftedness (Silverman, 1990). The parental absence, the health problems developed by their siblings, and their separation from other children most often occurred during the middle childhood years of the subjects' lives. These events would have had an effect on the girls, although the nature of the effect is unclear without further research.

At this level of the analysis, the influence of the mother on the eminent-to-be seems to be predominant as indicated by the results to several of the questions on the questionnaire. The parental style within the home, the absence of the father within the family, and the naming of the person who really raised the subject all point out the importance of the mother in their lives. Despite the patriarchal nature of our Canadian society at the time these girls were growing up, they named their mothers as being influential more often than their fathers, and considered their homes to be matriarchal more commonly than patriarchal.

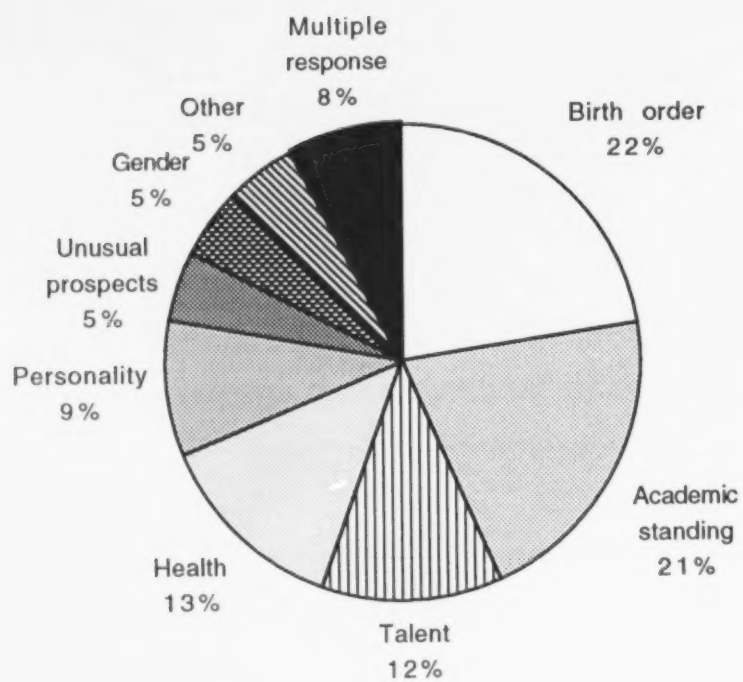
Research Question 3 What was the role of the eminent-to-be within the family?

Perception of being "special"

In this study 106 of the 197 respondents or 53.8% stated that they felt special in the family for some specified reason. The most common reason given for being special related to birth order. Sibling order was cited by 24 (22.6%) of the respondents. Five of them claimed it was due to being the youngest in the family and 19 said it was because they were the oldest or the only child.

The next most common reason provided was their performance at school with 22 reporting that their academic standing was why they were treated preferentially in their families. A similar category of response was the number who claimed they were special because of their talent (n=13). For some purposes these two categories could be combined. Delicate health was another often cited reason for being special (n=14). Five women said they were special because of their unusual prospects and gender was cited by a similar number of women. Personality aspects such as being shy, confident, outgoing, rebellious, or well-rounded were combined into one category labelled personality (n=10). The "other" category comprises responses that refer more specifically to the parents such as parental age, ethnicity, and surrogate for a deceased child.

Figure 4-3 presents the complete findings for this research question graphically. Some of the answers were combinations of the other categories and these answers are included in the category labelled multiple response. The percentages provided in the pie graph are percentages of the total that responded positively to the question of being special within their families.



n=106

Figure 4-3

Reasons why eminent Canadian women felt special as children

Indicators of "specialness"

Those who felt special in their families were asked for the ways in which their family members made them feel that way. The most common indicators of specialness in order of being reported were attention, respect, encouragement, praise, high expectation levels, and the provision of opportunity. Some stated that they were treated as an equal by their parents; whereas some were protected, and some were criticized. Table 4-6 summarizes the data for this question.

Table 4-6

Frequencies and Percentages of Responses Reporting the Ways in Which The Members of their Family Made Them Feel "Special"

Indicators of specialness	Frequency of response	
	n	%
Love, attention, care	24	26.1
Deferring, showing respect	15	16.3
Encouragement	14	15.2
Bragging or praising	11	11.9
High expectations	9	9.8
Provision of opportunity	7	7.6
Treatment as an equal	6	6.5
Protectiveness	3	3.3
Criticism	3	3.3
Total	92	100.0

The importance of being labelled special in the family was pointed out by Albert (1980) and Bloom (1985). Bloom believed that his subjects were special because of their talent. Albert felt that certain circumstances of birth and death placed the eminent-to-be in a favorable position within the structure of the family. Froggatt and Hunter (1980) in their study of eminent women also referred to the subjects as being "special" within the family of origin. They reported that half of their subjects felt that their fathers had treated them as special among their siblings.

Role within the family

When the respondents were asked if they had a special role in the family, 114 (57.9%) said that they did. Those subjects who indicated their roles most often named being the bookworm or the studious one in the family. Table 4-7 provides the numbers and percentages of respondents indicating various roles or epithets within the family. There were 15 who referred to specific aspects of their personality that led to their role within the family. Instead of labelling these as outliers they were grouped together under the heading of personality because of the variation and nature of the epithets. The set of responses varied from being well-rounded to idiosyncratic, mischievous to quiet and aloof, and from being the creative one to being the rebellious one. In addition, there were 12 respondents who named more than one role they had within the family. These occur in the table as "Multiple response."

Table 4-7

Frequencies and Percentages of Respondents Reporting their Role Within the Family

Role	Frequency of response	
	n	%
The bookworm, studious one	30	26.3
The intelligent one	18	15.8
Personality	15	13.2
The talented one	11	9.7
The responsible one	8	7.0
The peacemaker	7	6.1
The hardworker	4	3.5
The victim	3	2.6
The firstborn	3	2.6
Father's son	3	2.6
Multiple response	12	10.5
Total	114	100.0

Some of the roles have relatively low incidence rates despite their emphasis in the literature. Three respondents were victimized or abused in some way by their family members. Three others stated they were valued for being their father's son or, in other words, for the androgynous characteristics mentioned in the literature. The frequency of birth order roles or epithets is also very low. Only three of the subjects had a special role in the family because they were the firstborn.

The roles of these girls within their families, like their "specialness", usually referred to their superior abilities in academic areas. There is no indication that they had to downplay or hide their abilities as is often suggested in the literature. Instead their most common place within the family was tied somehow to early achievement and success.

Role of siblings

The subjects were asked if one of their siblings held a special role in the family. Most of the respondents (53.8%) did not think that another child in the family had a special role. Forty-three women indicated that they had a brother with a special role and 35 reported that a sister had a special role. Twelve of the respondents listed more than one sibling as having a special role. Three subjects indicated that all the children in the family except her had a special role. Eight respondents felt that all the children in her sibship had a special role.

Of those who thought that their sibling was special in their family, the reasons most often given were gender-related ($n=19$), due to their ill health or problems ($n=16$), due to their skills or abilities ($n=15$), or because of their birth order ($n=11$). Unlike the special positions they perceived themselves as holding, the responses relating to their siblings did not attribute the roles to their abilities, gifts, or talents.

Bloom (1985) found in his study of the exceptionally talented that only one child in a family was treated in a special way and had his or her particular talent developed. On the other hand, Galton (1869) and other early hereditarians believed that genius and eminence were more prevalent in certain families and traced the genealogy of famous families. The findings of this study do not document either point of view regarding this variable. The results are not clear and more research is needed in this area.

Intensity of childhood interests

Most of the respondents (122 or 61.8%) indicated that they had an interest in their childhood that could be called a passion. There were only 75 women in the sample who

did not report having a childhood interest of intensity. Table 4-8 provides the numbers and percentages of women who reported the various childhood interests that were intense enough to be called "passions."

The most commonly named passion was for reading and many subjects reported reading in combination with another interest. Some of the respondents indicated more than one interest and these were broken down into multiple responses that included reading and those that did not include reading in order to calculate the overall relative importance of reading. When these two categories pertaining to reading are combined, one quarter of the eminent women stated that reading was their childhood interest.

Table 4-8
Frequencies and Percentages of Respondents Reporting a Childhood Interest That
 Could Be Called a "Passion"

Childhood interest	Frequency of response	
	n	%
Reading	39	32.0
Sports	13	10.6
Art	11	9.0
Petkeeping	9	7.4
Interest in world	7	5.7
Music	6	4.9
Crafts or games	6	4.9
Science or mathematics	5	4.1
Writing	3	2.5
School	3	2.5
Perfectionism	3	2.5
Cooking	1	0.8
Multiple response including reading	12	9.8
Multiple response not including reading	4	3.3
Total	122	100.0

There is much diversity in the list of interests reported by these eminent Canadian women. It is interesting to note that only one girl reported high interest in cooking. Hollingworth (Silverman, 1989) first pointed out that gifted girls are not as interested in

the traditional pastimes of other girls such as playing with dolls and tea sets. The uniqueness of the characteristics of females who do become high achievers is evident.

Many of the subjects were fervent readers as girls. This is in keeping with the findings of many other studies (Helson, 1971; Kerr, 1985; Subotnik, 1993; Terman, 1959). Terman (1959) reported that the gifted children studied showed greater interest in activities that required thinking and in activities that were quiet, and only mildly social. The teachers of Terman's subjects reported that 88% of them read more than the average child. Helson (1971) stated that her female mathematicians engaged in leisure activities that were largely intellectual in nature and cited reading the classics, listening to classical music, and going to theatre or concerts. Reading was the most popular leisure activity pursued by the gifted children educated at the Hunter College Elementary School and studied as adults by Subotnik et al. (1993). Drawing, painting, sports, skating, music, dancing, horseback riding, imaginative play, cycling and playing games were also listed frequently by these subjects from New York.

Continuity of interests into adulthood

Over three-quarters (93) of those respondents who reported having an intense childhood interest indicated that their passion continued into their adult lives. The largest response as to how it extended in their lives was that they are now scholars or professors. Another popular response was that they have made their passion a part of their present occupation.

Summary

This research question delved into the dynamics within the families as well as the interests that the subjects reported having as girls. Feelings of favoritism and perceptions of family roles are affective characteristics that comprise the dynamics of the family. Interests and abilities contribute to the roles and positions of the individuals within the dynamics of the group.

Most of the subjects in this study felt that they were "special" within the family. Albert's (1983) theory that eminent men are special due to birth order became more convincing when many of the women in this study stated that their sibling position was indeed the reason they were special. Bloom (1985) believed that his subjects were special because of their gifts and talents. The results for this study also demonstrate this phenomenon. Combining the two large categories of reasons for being special of academic standing and talents, there were more women who felt that their abilities were responsible for their special status within the family than their birth position.

Most of the respondents also felt that they had a special role within the family. The roles reported emphasized the giftedness of the respondents: their studiousness, academic performance, and intelligence. When they were asked about the roles of the siblings, the answers did not show that their brothers and sisters were appreciated for their gifts and talents. Most did not report special roles for their siblings; for those who did, they felt the favoritism was based on the gender, birth position, health or behavioral problems of the sibling.

Most of the respondents reported having an interest intense enough to be called a passion. Reading was the most popular interest and the traditional homemaking interests of girls were noticeably absent from the pastimes listed. Not only did these respondents have a consuming interest in their childhoods, they also believed that same interest continued to have an impact on their adult lifestyle in some way.

Emanating from the results for this first level of analysis were indications of relationships among the variables studied within the three categories based on the research questions. Family structural variables seemed to be related to those of the dynamics of the family; the dynamics of the interpersonal relationships would also be affected by the climate of the childhood home. The subjects often felt special in the family because of their position within the structure of the family. In referring to the roles played by their siblings, the respondents again pointed out the significance of

gender and birth order. The absence of the father, the number of problems exhibited by the siblings, and the incidence of being separated from other children were variables of the family environment that may have affected the development of a girl's interests or her role within the family. The second level of analysis sought to investigate the impact of family structural variables and family climatic variables on the dynamics of the family.

Second level of analysis

Because the focus of the study was on the specialness of the girl within her family, the variable of being special was used as a basis for the second level of analysis. This analysis sought evidence to relate being "special" with the other family variables. Some variables were not used because of their complex and dual nature, for example, the age of the parents. Other variables were composed of categorical data that were not analyzable in any meaningful way, such as the indicators of being special, and the continuity of interests beyond childhood.

The results used in the first level of analysis were recoded so that the analysis for this level could be based on whether the subjects were characterized by the variable or not. The variables, which were often dichotomous after the recoding, were then tested for association with the perception of being special within the family using the nonparametric statistic, chi-square. Table 4-9 summarizes the results for this level of the analysis. Complete results of the chi-square tests for each of the variables are included in Appendix C.

Table 4-9

The Associations between being "Special" and Other Factors within the Structure, Climate, and Dynamics of the Family of Origin

Family variable	Chi-square association with being special			
	N	df	χ^2	p
Family Structure				
Birth order	197	1	2.548	.110
Sibship size	197	4	20.337	.0004**
Age difference	194	1	.040	.842
Having brothers	197	1	7.550	.006**
Having sisters	197	1	3.578	.059
Having eminent siblings	197	1	7.925	.005**
Family Climate				
Influential person	195	3	10.176	.017*
Parental style	196	3	8.368	.039*
Parental marital status	197	1	.038	.844
Parental absence	197	1	8.591	.003 **
Parental loss	197	1	2.966	.085
Problem of a sibling	197	1	1.169	.280
Separation from children	197	1	7.484	.006**
Family dynamics				
Role within the family	197	1	3.715	.054
Role of siblings	197	1	2.084	.149
Intensity of interest	196	1	17.185	.00003**

Note. * $p < .05$ ** $p < .01$ level

Some of the variables studied in each of the categories according to the research questions showed significant associations with the perception of the eminent of being special within the family. There were several variables of family structure that showed an association with being special. The size of the sibship, the sex difference among the siblings, and the eminence of siblings were not independent of the perception of being special. The variables relating to the climate or environment within the family showed significant associations except for parental marital status, parental loss through death, and problem of a sibling. One of the other variables of family dynamics, that of intensity of interest, was highly correlated with the perception of being special.

Family size seems to be associated with the girl being special when the number of children is one or three (See Table C-2). The girl who does not perceive herself as special is much more likely to have come from a family of two children, or four or more children. This finding raises some of the issues addressed by Ernst and Angst (1983) regarding the research problems that arise in the study of birth order and family size. They would point to having an undisturbed home and higher income and social class as being more predictive of success than sibship size. Because the present study did not control for socio-economic status, the rationale behind this finding cannot be explored. Certainly, some interesting questions emerge from this for further research.

Those subjects who had no brothers were significantly more likely to report being special within the family. The same strength of association did not appear for those who reported having sisters. The more apt a girl was to perceive of herself as special within the family, the less apt she was to have an eminent sibling.

Birth order and the difference in ages, two variables for which there were important results in the first level of analysis, did not show significant relationships with the perception of being special. The chi-square analysis related being firstborn or laterborn to being special or not. The number of subjects who felt special because of being one of the laterborns in the family must be almost as large as those who felt

special because they were firstborn. Those with an age difference less than five years reported feeling special at a similar rate to those who had a larger age difference between them and their next oldest sibling. The respondents did, however, in indicating the reasons why they felt special, refer often to their sibling position (See Figure 4-3). The lack of association between these variables demonstrates the complexity of the relationship between the structural characteristics of a family and the dynamics produced because of the composition of the family. It does not diminish their importance in the findings for this study.

Intriguing relationships emerged between factors in the climate of the family and the incidence of being special in the family. Parental style, parental absence, the most influential person for the girl, and her separation from other children were all significantly associated with her feeling of being special. In the association of parental style with the perception of being special, more of the girls who felt special were from matriarchal homes and fewer were from patriarchal or partnership homes than would be expected (Table C-8).

There is also an association between having a parent absent in the family and feeling special. Those who experienced the absence of their parent were more likely to report being special in their family (Table C-10). The girls who had both parents present during their childhood were less apt to perceive themselves as having a special place in the family.

The person who was the most nurturant, protective, or influential was most often named as the mother or both parents. There was an association between this influential person and the perception of being special. Surprisingly, the girls who named their father were more likely to have reported being special than those who named the mother, both parents, or another person in this role (Table C-7). The findings at this level of analysis seem to confirm the earlier findings (Callahan, 1979; Froggatt & Hunter, 1980; Helson, 1971) about the importance of an early relationship of the gifted

girls with her father. When this finding is considered along with the conclusions from the first level of analysis for this variable, an interesting pattern emerges. Even though most of the eminent women were influenced more by their mothers, those who were closer to their fathers were more apt to feel special.

The girls who were separated from their siblings and peers were more likely to report being special in their families. McCurdy (1983) found a connection between genius and isolation from other children. The importance of having time alone to develop a talent or interest was pointed out by Kerr (1985), who also found that her eminent female subjects were often separated from their peers.

Breakdown of the parental marriage, loss of a parent, and having a sibling with a serious problem are variables that were not established as descriptive in the first level of analysis. Possibly the small number of women affected by each of these conditions during their childhood resulted in the non-establishment of relationships for this level of analysis.

A strong relationship appeared between being special and another variable studied in the category of family dynamics, that of having an interest intense enough to be called a passion. Those who reported feeling special within the family were much more likely also to have a childhood passion. Having siblings with a specific role in the family did not show a significant association with the eminent-to-be perceiving herself as special. Whether or not the girl had such a role herself within the family was, however, related to the perception of being special at a level very close to significance.

Third level of analysis

The years of birth for the respondents served as categorical information for placing them into cohort groups. In four cases the year of birth was not given, and for these subjects the cohort analysis was not available. Table 4-10 provides a breakdown of the sample into birth cohorts.

Table 4-10
Frequencies and Percentages of Respondents in the Various Cohorts Based on Decade of Birth

Decade of birth	Frequency of response	
	n	%
1900-1909	2	1.0
1910-1919	3	1.5
1920-1929	25	12.7
1930-1939	43	21.8
1940-1949	78	39.6
1950-1959	41	20.8
1960-1969	1	0.5
No response	4	2.0
Total	197	100.0

The sample was not analyzable using the decades of birth as cohort groups, necessitating the application of another categorization. The breakdown of the ages by the decades was not statistically sufficient due to the small sample size in some of the decades and the over-representation of those born in the 1940s. World War II was chosen as a marker for the recategorization for several reasons. It was a major sociological and historical event that had an effect on the lives of all Canadians. If

family differences were manifested during the twentieth century, they should be evident in groups based on prewar, during the war, and after the war. The sampling breakdown was based on the eminent woman's year of birth being prior to 1939, between 1939 and 1945, and after 1945 as shown in Table 4-11.

Table 4-11

Frequencies and Percentages of Respondents in the Various Cohorts Based on Being Born Before, During or After World War II

Period of birth	Frequency of response	
	n	%
1900-1938	67	34.0
1939-1945	45	22.8
1946-1969	81	41.1
Missing	4	2.0
Total	197	100.0

The cohort analysis looked for significant differences among the family variables of composition, climate, and dynamics. Those variables that had an underlying continuum such as age were analyzed using analysis of variance and the variables that were coded were analyzed using the chi-square statistic. Table 4-12 provides the results of the analysis of variance and Table 4-13 presents the chi-square statistics. Complete results of the chi-square tests for each of the variables are included in Appendix C.

Table 4-12

The Analysis of the Descriptive Variables Based on Cohort Group According to Birth Before, During, or After the Second World War

Anova with war cohort groups			
Descriptive variable	df	F	p
Family Structure			
Age of the mother	2/186	.032	.968
Age of the father	2/183	.380	.684
Birth order	2/190	1.538	.218
Sibship size	2/190	.617	.541
Family Climate			
Age of marriage breakdown	2/24	5.667	.010*
Age when parent was absent	2/74	.523	.594
Age at death of parent	2/54	1.935	.154
Age of sibling problem	2/36	1.243	.301
Age of separation from children	2/29	0.796	.461

Note. * $p < .05$

Table 4-13

Chi-Square Analysis of the Variables Based on Cohort Group According to Birth Before, During, or After the Second World War

Chi-square analysis with war grouping				
Descriptive variable	N	df	χ^2	p
Family Structure				
Birth order	193	2	3.667	.160
Sibship size	193	8	5.102	.747
Age difference	192	2	.044	.978
Having sisters	193	2	3.075	.215
Having brothers	193	2	.358	.836
Having eminent siblings	193	2	5.087	.079
Family Climate				
Influential person	191	6	7.448	.281
Parental style	193	4	1.377	.848
Parental marital status	193	2	.120	.942
Parental absence	193	2	6.243	.044 *
Parental loss	193	2	.629	.730
Sibling with a problem	193	2	2.875	.237
Separation from children	193	2	3.781	.151
Family dynamics				
Perception of being "special"	193	2	3.885	.143
Role within the family	193	2	1.247	.536
Role of siblings	193	2	.410	.815
Intensity of interest	192	2	4.228	.121

Note. * $p < .05$.

Analysis of variance for the continuous variables did not provide evidence of major family differences over the time period. There were no significant differences between the groups on the variables related to the composition of the family. The only significant difference was in the age difference among the groups when the marriage of the parents failed. The subjects who were born during the war had a significantly lower age when their parents were divorced or separated than the subjects in the other cohort groups based on the war. There were no differences in ages for the groups for their parents being absent from the home, the development of a problem by one of their siblings, or their being isolated from their siblings for other reasons.

Chi-square analysis of the categorical variables based on the cohort groupings did not reveal any important differences despite the large age differences among the subjects. The only significant association appeared with the absence of a parent. Those born during the war were more likely to report the absence of their parent during their childhood. There were no significant differences in family composition, or family dynamics among the 197 subjects. The lack of difference among the cohort groups for the family provides evidence of the homogeneity of the sample.

Summary and overall discussion

The hypothesis that eminent Canadian women as girls occupied a special position within the family composition, climate, or dynamics that enhanced their achievement and promoted their subsequent renown is not rejected. The first level of analysis provided a description of the typical family for the eminent-to-be. The second level of analysis looked for relationships among the variables with the girls' perceptions of being special within their families of origin. The third level of analysis served to verify the findings of the first level by ruling out cohort differences among groups based on their year of birth.

The variable that was the most commonly ascribed to by the sample group is having an interest intense enough to be called a "passion." About 62% indicated a very

strong interest and of these 76% felt that their interest persisted into and impacted their adult life. In the second level of analysis, the variable with the highest significance level in association with being special was having an intense interest. If, then, there could be only one variable chosen to describe the eminent-to-be, it would have to be the capacity to intensely enjoy an interest.

The first level of analysis established the subjects as most often the firstborn child of older parents in a family that ranged in sibship size from 1 to 11 children. They perceived the climate of their home to be matriarchal, or partnership, with their mother being the most influential person. There was some parental absence and often the girls were separated from other children. The rates of marital breakdown were low. Most of the girls reported feeling special, having a particular role, or having an intense childhood interest. Eminent Canadian women occupy a special place within their families of origin both by their birth position as theorized by Albert (1980), and by virtue of their talents and interests as theorized by Bloom (1985).

Associations that proved to be significant with the perception of being special were found in all the categories studied regarding the family. The variables within the category of the structure of the family associated with feeling special were sibship size, having brothers, and having eminent siblings. Within the category of family climate there were significant associations of feeling special with parental style, parental absence, influential person, and separation of the girl from other children. Having an intense childhood interest was highly related to the perception of being special. Understanding the reasons why these variables are related will require further research, but there is a clear link between the structure, climate, and dynamics of the family.

Any conclusion about the family of the Canadian eminent would have been open to criticism if important differences were noticed in the third level of analysis. There was such an age discrepancy among the subjects that there could have been significant differences in the structure, climate, or dynamics of the families of the sample because

of the variations of the typical Canadian family over the decades. These large differences did not show: the families of the sample must have more commonalities than differences. Eminence may be closely associated to certain family variables that are timeless. The Canadian family that produces eminence has unique and stable characteristics that may have helped shape the development of these eminent women.

Chapter 5 Conclusion

This chapter provides a summary of the significant findings within the framework of the rationale for the study. Comparisons are made with previous studies of eminent men and women and the limitations of the study are discussed. The contributions of the study to the field of gifted education are anticipated and suggestions for further study are made.

The position of a gifted girl within the family is a very complex issue. Her development into an eminent woman must begin within the family structure. The climate of the home affects every aspect of life for each of the family members. The special place or role of the gifted girl within the confines of the composition and atmosphere of the home contributes to her adult success and lifestyle.

Most of the eminent Canadian women held a special position within the family of origin that enhanced their achievement and subsequent success and renown. They were treated differently because of their birth position in the family, their academic achievements, or their talents. More importantly, they had the ability to become so absorbed in a field of interest that it became a passion. The combination of being treated differently in the family, experiencing early successes, and having intense interests may have served as the prerequisite to the high level of personal success and renown they enjoyed in adulthood. Their special status in their careers was preceded by receiving special status within their childhood family homes.

The major findings include the following:

- The typical eminent-to-be was the firstborn child in a family of three children.
- Typically her siblings were both brothers and sisters who usually did not achieve the level of renown that she did.
- The climate of the homes was usually stable, although the fathers were often absent and the girls were often separated from other children.

- The girls were most often raised by their mothers in homes that were not patriarchal in nature.
- The gifted girls developed intense interests that were most often in reading.
- The typical eminent-to-be enjoyed a special position within her childhood family that she attributed to her birth order, her achievements, or her talents.
- The perception of being special was found to have a significant chi-square association with the following variables: sibship size, having brothers, having eminent siblings, influential person, parental style, parental absence, separation from other children, and intensity of interest.
- The search for family differences among the cohort groups based on pre-war, during war, and post-war did not produce any important findings.

Comparison to other studies of eminence

The families of the eminent women who comprised this sample portrayed many of the same characteristics as those described in earlier studies of eminence. The girls were usually the firstborn child (Albert, 1983; Cox, 1983; Froggatt & Hunter, 1980; Hennig, 1973; Roe, 1983; Silverman & Kearney, 1989). Many of the girls reported being separated from other children (Kerr, 1985; McCurdy, 1983; Roe, 1983). Over half of the respondents stated they felt "special" in the family for some reason that they indicated (Albert, 1983; Bloom, 1985; Kerr, 1985).

Bloom (1985) pointed out the importance of being labelled special in the family. He believed that his subjects were special because of their talent. Albert (1980) felt that certain circumstances of birth and death placed the eminent-to-be in a favorable position within the structure of the family. This study would seem to corroborate both theories. These subjects most often referred to their birth position or to their talent, or intelligence as the underlying reasons for their "specialness." There was an association between having an interest that could be labelled a "passion" and having a special role in the family. The relative frequencies of the responses would indicate, however, that where

the girls stood in the family was not as important as their special role in the family and the development of their interests.

Kerr (1985) believed that the perception of being different or special led to the sense of separateness experienced by the seven eminent women she studied. Their resulting ability to avoid confluence protected them from peer pressure, promoted their high levels of achievement, and allowed them to experience personal fulfillment. In this study many of the women were separated from other children for various reasons. These women were found to be the same ones who reported reasons for feeling special. This finding lends support to the belief expressed by Kerr (1985) as well as those theorized by Albert (1983) and Bloom (1985).

There are, however, some differences between these findings and those of other studies that related to eminent men and women. Unlike the women in other studies (Helson, 1973; Hennig, 1971), most of these subjects did have brothers and the fathers were not the dominant parents in the family. Having one or more brothers was associated with the feelings of specialness expressed by the subjects. The climate of the homes was not overtly lacking emotionally as Osche (1991) reported. These women did not usually have to cope with the divorce, desertion, or separation of their parents, or the death or illness of a parent or a sibling as did the eminent men studied by Albert (1980), and Roe (1983).

Some of the differences between eminent females and males appear to be gender-related themselves. The eminent women sampled identified with their mothers rather than their fathers. They listed their mothers as being the ones who raised them. The type of home was most often partnership or matriarchal, and not patriarchal. This may suggest that these girls were the daughters of strong women. The importance of the mother as the most likely adult role model was pointed out by Hay and Bakken (1991). The strong role of the mother that emerges in these findings agrees with the work of Froggatt and Hunter (1980), and Solomon (1990).

Some of the findings, which require more research, are unclear. Most of the women referred to their mothers as the most influential person in their homes in the first level of analysis. Both Callahan (1979) and Helson (1973) believed that a good relationship with the father was necessary to the achievement of the gifted girl. The second level of analysis confirmed that having fathers as the most influential parent was associated with the feeling of being special within the family.

Some of the findings were not anticipated by the literature. The full range of family sizes was found within the sample. For a substantial proportion of the laterborn girls, there was a large age difference between them and their next older sibling. Other studies had not anticipated the importance of having male siblings that emerged from these results. The parental style of the homes was largely matriarchal or partnership, rather than patriarchal. These women had intense childhood interests that were perceived to have carried over into their adult lives and their careers.

Contributions of the study

This study has contributed to the study of origins of eminence. Factors of family structure, family climate, and family dynamics have been described in some detail for the sample of eminent Canadian women. The overwhelming number of firstborns found in studies of eminent males could have been explained away by the patriarchal model in which the perpetuation of the family name is highly valued and the inheritance goes to the firstborn son. When the same trend is confirmed in females, there is a tendency to believe that more attention should be paid to sibling order and its effects on the family dynamics. It is highly possible that being firstborn is a significant precursor to attainment of eminence.

The concept of "specialness" as conceived of by many of the other authors is strengthened and furthered. My findings are that most, but not all, eminent Canadian women felt special within their families. Because of the large sample size and the fact that more than half said they felt special, the notion of being special in the family may be

generalized to eminent women. The sense of being special or different from others may protect gifted girls from the stereotypic sex-roles so prevalent in society and allow them to achieve and become highly successful. Just as the women studied are special within their families, the families that facilitate eminence are special among families.

It is my belief that the nature of the reported interests and special roles indicates that they provided the girls with opportunities to experience instrumentality in their young lives. Early success would improve the self-esteem of the girls and serve as a foundation for later achievement and renown. Not only did the girls enjoy a special role within the family that provided them with the opportunities and encouragement to achieve, their early development of an intense interest provided the direction needed in the pursuit of success.

Limitations to the study

Several limitations to the study are acknowledged. The retrospective nature of the study necessitates reliance on the credibility of the memory of these women of their childhood homes. Intervening incidents and historical events in their lives may have colored their recollection of the family factors studied. No other sources of information were available to substantiate their accounts of the details about their family life.

Other limitations are inherent in any study of the family due to the complex and covert nature of the psychological processes that take place within the confines of the home environment. Interpersonal relationships within any family are often hidden influencers, but extremely powerful operatives on the family members.

There has been some recognition that different beginnings might be conducive to the production of eminence in different fields of endeavor. These women come from many different fields of endeavor and no effort was made to distinguish the academics from the musical arts, for example. The findings for each of the family variables have been discussed with respect to similar findings of other researchers despite differences in the field in which the samples may have achieved their success or eminence.

Implications for further research

The group of eminent Canadian women who comprised the sample has been described rather than the individuals within that group. Additional qualitative data from this sample has been gathered that will be used to describe the phenomenology of these women within their families of origin. To fully appreciate the eminent woman in today's society, she must be viewed as an individual and not as a stereotype: however, a profile of the typical high achiever is useful in program planning for the gifted girl.

The field offers an inviting area for further research with many implications for practice and theory. Professionals who work with children in the schools are always aware of the tremendous impact of the family. Skilled educators and psychologists are needed to work not only with gifted girls, but also with their parents to assist them with the provision of opportunities, but more importantly with appropriate expectations.

This study could be the basis for later quasi-experimental work and a precursor to the longitudinal studies being called on by all the current contributors on the subject (Hollinger & Fleming, 1993; Subotnik & Arnold, 1993). Instead of concentrating on the differences among these eminent women, this project has focused on their similarities in an attempt to establish some groundwork for future research. Further study is required in the every aspect of the influence of the family: its composition, climate, and the dynamics that take place within that structure and climate.

Study of the structure or composition of the family may seem to be the study of superfluous details. I feel, however, that the position of the girl within that family structure had consequences that contributed to her later eminence. The high proportion of firstborns and of those who were laterborns with large spacing between them and the next sibling point to the importance of these variables. The ratio of brothers and sisters is also an interesting area that could be pursued in view of the emphasis on androgynous characteristics of the gifted and the sex role barriers to achievement. The associations found in the second level of analysis between feeling special and having brothers and

having eminent siblings were rather unexpected according to the results of other work (Bloom, 1985; Hennig, 1973) and these relationships require further study.

The findings relating specialness to the climate of the family point to a need for further research in this area. Within the family atmosphere there may be specific conditions that promote a sense of worth and individual achievement motivation for girls. The equivocal findings in the two levels of analyses referring to the influence of the father in the life of the gifted girl must be further investigated. The perception of being special within the family suggests that the girl felt connected to her family, but also differentiated from the other members. More study is needed to see how this specialness fits in with the work of Brown and Gilligan (1992).

Parental absence and separation from the peer group are factors that were pointed out in the studies of eminent men. There may be internal factors that are associated with the lack of influence from one of the parents or from the peer group in the development of the child. Responsibility or independence could be fostered by this unusual circumstance. What was, however, an unusual circumstance in the past, may not be for the current generation of children. The stable home, as traditionally defined, is becoming less common than it was in the previous generations. The modern family is increasingly mobile and single parented; it will be interesting to see how this impacts the maturation of a sense of responsibility in the children affected.

There is a need to examine in more depth the family dynamics of coping with the talents and early interests of girls. Intense childhood interests are not only associated with a feeling of being special, they continue to affect the life and work of the subjects in their adulthood. As specified by Silverman and Kearney (1989), the parents of the extraordinarily gifted are in need of outside support and special services to assist them with the facilitation of the development of the gifted child's potential.

Comments

Factors within the family have been described in depth in this study. Relationships have been shown to exist among factors from within the structure, the climate, and the dynamics of the childhood family. Although these associations exist, the author wants to emphasize that the explanation for how the giftedness of these girls resulted in their later eminence is not so easily supplied. A multiplicity of factors must work in concert to produce the favorable course of development necessary for high achievement. Knowing which factors are propitious and making a conscious effort to maximize their confluence must be the goal of all parents, educators, and counselors of gifted girls.

The consensus is that the highly gifted are shaped by their environment. I believe that the diversity found in the characteristics of the family indicate that these gifted women were also able to utilize and perhaps even shape their home environments to somehow fit their needs. These high achievers learned to capitalize on whatever conditions they were called upon to contend with, and still succeed and become outstanding in their field of endeavor. "Giftedness in a child is a powerful operative within a family; it is both a dependent and independent variable, a cause as well as an effect" (Olszewski et al., 1987, p. 25).

One of the most intriguing questions for educators and parents is how childhood giftedness can be coaxed into the full development of potential in adulthood. The likelihood of becoming an exceptional adult is closely linked to family characteristics and values. We cannot control the environments that gifted children live and grow up in, but it is important to understand the component variables of an environment that enable or promote human development to its full potential. This study has contributed to the development of a more composite picture of the gifted girl's position within her childhood family. Being firstborn and part of a secure, stable family, plus having a special role or interest have been established as important indicators of success. The author of this research project has gained a better understanding of giftedness in girls

and hopes that the reader has an increased level of knowledge, as well. It is, however, apparent that we really know very little about the development of the gifted girls compared to what we need to know.

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Appendix A
Questions from the Questionnaire

Research Question 1 What was the composition of the family of origin for the eminent Canadian women sampled?

Questions as they appeared on the questionnaire

1. Place yourself (ME) and each sibling in their order of birth in the following chart. Indicate their sex and year of birth. Enlarge the chart if needed. Circle any sibling who has achieved adult public career renown equal to your own.

Birth position	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Sex(M/F)										
Year of birth										

Eldest <-----> Youngest

Variables studied using the results of this question

- Birth order
- Sibship size
- Age difference
- Sex of siblings
- Eminence of siblings

2. How old was your mother (female guardian) _____ and father (male guardian) _____ at your birth?

Variables studied using the results of this question

- Age of the parents

Research Question 2. How did Canadian women who have achieved eminence perceive the climate of the childhood home?

Questions as they appeared on the questionnaire

3. Considering those close to you, who really raised you in the sense of being most nurturant, protective and perhaps influential? Choose one.

Mother ____ Father ____ Both ____ Grandparent ____ Sibling ____

Relative ____ Non-relative ____ Other ____ Explain _____

Variables studied using the results of this question

- Influential person

4. Would you describe your childhood home as (choose one),

_____ matriarchal (females are most influential, decide, rule)

_____ patriarchal (males are most influential, decide, rule)

_____ partnership (parents share influence, decisions, rule)

_____ egalitarian (all family members share influence, decide, rule)

Variables studied using the results of this question

- Parental style

5. Circle and write in the words which render the following statements correct for you. Check N/A if not applicable. Where multiple responses apply separate them clearly. Add sheets if necessary.

1. My father/mother was absent for long periods because _____

_____ when I was _____ years old. N/A

2. My father/mother died when I was _____ years old. N/A

3. A sibling in the ____ birth position suffered a severe illness/died/was handicapped/_____ (other) when

I was ____ years old. N/A

4. My parents were separated/divorced/deserted me when I was ____ years old.

5. As a child I was separated from other children (including siblings/not including siblings) for a prolonged period due to illness ____, geographic locality ____, parental decision ____ or other (specify) _____ when I was ____ years old.

6. Comment _____

Variables studied using the results of this question

- Parental marital status
- Absence of a parent
- Loss of a parent
- Separation from other children

Research Question 3. What was the role of the eminent-to-be within the family?

Questions as they appeared on the questionnaire

6. 1. I was considered a 'special' child in the family (reasons could include gender, delicate health, unusual prospects, surrogate for deceased sibling, talent) because _____

2. My family showed I was special by _____

3. I did/did not have a definite role or epithet in my family (e.g. the musical one, the bookworm, peacemaker, clever ...). Explain: _____

4. A brother/sister who was younger/older was considered 'special'. Explain: _____
5. I was/was not set apart or considered special in any way.

Variables studied using the results of this question

- Perception of being "special"
- Indicators of specialness
- Having a special role
- Role of the siblings

8. 1. Could any of your childhood hobbies or activities be called "passions"? Yes/No Explain _____

2. Did any aspect of this childhood "passion" influence or emerge in your adult vocation? Yes/No Explain _____

Variables studied using the results of this question

- Intensity of interest
- Continuity of interest

Appendix B

A Comparison to the Previous Study

A Comparison to the Previous Study

In an attempt to validate the sample of this study as being representative of the previous study done by Yewchuk, Chatterton, and Jackson (1990), a comparison of the samples was completed based on the family-related variables that were the focus of the present study and that were available from the previous data.

Table B-1

A Comparison of the Two Samples by Age

Age category	Study			
	Yewchuk et al. (1990)		Present Study	
	n	%	n	%
under 35	155	18.7	14	7.3
35-45	303	36.6	82	41.6
46-55	190	23.0	49	24.9
56-65	127	15.4	32	16.2
over 65	52	6.3	20	10.1
Total	827		197	
Mean	n/a		48.0	
Mode	35-45		42.0	
Median	35-45		46.0	

Table B-2

A Comparison of the Sibship Sizes for the Two Samples

Children in the family	Study			
	Yewchuk et al. (1990)		Present Study	
	n	%	n	%
1	93	11.2	29	14.7
2	213	25.8	47	23.9
3	223	27.0	57	28.9
4	127	15.4	35	17.8
5	58	7.0	8	4.1
6	31	3.7	11	5.6
7	21	2.5	5	2.5
8	13	1.6	2	1.0
9	7	0.8	2	1.0
10	2	0.2		
11	4	0.5	1	0.5
12	1	0.1		
13	1	0.1		
Total	794		197	
Mean	3.24		3.15	

Table B-3

A Comparison of the Birth Orders for the Two Samples

Ordinal position	Study			
	Yewchuk et al. (1990)		Present Study	
	n	%	n	%
1	403	48.7	103	52.3
2	218	26.4	49	24.9
3	109	13.2	27	13.7
4	32	3.9	10	5.1
5	16	1.9	5	2.5
6	2	0.2	0	
7	5	0.6	2	1.0
8	6	0.7	1	0.5
9	0		0	
10	1	0.1	0	
11	1	0.1	0	
Missing	34		0	
Total	827	100	197	100

Appendix C
Chi-Square Tests

Chi-Square Tests of Various Variables by the Perception of Being Special within
the Family of Origin for the Second Level of Analysis

Table C-1

Chi-Square Test for Sibling Position by Being Special

Sibling Position	Special	Not special	Row total
Firstborn			
Number	61	42	103
Expected	55.4	47.6	
Percent	31%	21.3%	52.3%
Residual	5.6	-5.6	
Laterborn			
Number	45	49	94
Expected	50.6	43.4	
Percent	22.8%	24.9%	47.7%
Residual	-5.6	5.6	
Column Total	106	91	197
	53.8%	46.2%	100%

Chi-square 2.548

Degrees of freedom 1

Significance p=.110

Table C-2

Chi-Square Test of Size of the Sibship by Being Special

Sibship Size	Special	Not special	Row total
One child			
Number	25	4	29
Expected	15.6	13.4	
Percent	12.7%	2.0%	14.7%
Residual	9.4	-9.4	
Two children			
Number	21	26	47
Expected	25.3	21.7	
Percent	10.7%	13.2%	23.9%
Residual	-4.3	4.3	
Three children			
Number	33	24	57
Expected	30.7	26.3	
Percent	16.8%	12.2%	28.9%
Residual	2.3	-2.3	
Four children			
Number	18	17	35
Expected	18.8	16.2	
Percent	9.1%	8.6%	17.8%
Residual	-.8	.8	
Five or more			
Number	9	20	29
Expected	15.6	13.4	
Percent	4.6%	10.2%	14.7%
Residual	-6.6	6.6	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 20.337 Degrees of freedom 4 Significance p=.0004

Table C-3

Chi-Square Test of Age Difference between the Eminent-to-be and her Next Oldest Sibling by Being Special

Age Difference	Special	Not special	Row total
Less than 5 yr.			
Number	93	78	171
Expected	92.6	78.4	
Percent	47.9%	40.2%	88.1%
Residual	.4	-.4	
5 yr. or more			
Number	12	11	23
Expected	12.4	10.6	
Percent	6.2%	5.7%	11.9%
Residual	-.4	.4	
Column total	105	89	194
	54.1%	45.9%	100%

Chi-square 0.040 Degrees of freedom 1 Significance p=.842

Table C-4

Chi-Square Test of Having a Sister or Not by Being Special

Having a Sister or Not	Special	Not special	Row total
No sister			
Number	44	26	70
Expected	37.7	32.3	
Percent	22.3%	13.2%	35.5%
Residual	6.3	-6.3	
1 or more			
Number	62	65	127
Expected	68.3	58.7	
Percent	31.5%	33%	64.5%
Residual	-6.3	6.3	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 3.578 Degrees of freedom 1 Significance p=.059

Table C-5

Chi-Square Test of Having a Brother or Not by Being Special

Having a Brother or Not	Special	Not special	Row total
No brother			
Number	48	24	72
Expected	38.7	33.3	
Percent	24.4%	12.2%	36.5%
Residual	9.3	-9.3	
1 or more			
Number	58	67	125
Expected	67.3	57.7	
Percent	29.4%	34%	63.5%
Residual	-9.3	9.3	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 7.550 Degrees of freedom 1 Significance p=.006

Table C-6

Chi-Square Test of Having an Eminent Sibling or Not by Being Special

Eminent Siblings	Special	Not special	Row total
None			
Number	91	63	154
Expected	82.9	71.1	
Percent	46.2%	32%	78.2%
Residual	8.1	-8.1	
1 or more			
Number	15	28	43
Expected	23.1	19.9	
Percent	7.6%	14.2%	21.8%
Residual	-8.1	8.1	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 7.925 Degrees of freedom 1 Significance p=.005

Table C-7

Chi-Square Test of Most Influential Person by Being Special

Influential Person	Special	Not special	Row total
Mother			
Number	53	42	95
Expected	51.2	43.8	
Percent	27.2%	21.5%	48.7%
Residual	1.8	-1.8	
Father			
Number	17	6	23
Expected	12.4	10.6	
Percent	8.7%	3.1%	11.8%
Residual	4.6	-4.6	
Both parents			
Number	18	31	49
Expected	26.4	22.6	
Percent	9.2%	15.9%	25.1%
Residual	-8.4	8.4	
Other person			
Number	17	11	28
Expected	15.1	12.9	
Percent	8.7%	5.6%	14.4%
Residual	1.9	-1.9	
Column total	105	90	195
	53.8%	46.2%	100%

Chi-square 10.176

Degrees of freedom 3

Significance $p=.017$

Table C-8
Chi-Square Test of Parental Style by Being Special

Parental Style	Special	Not special	Row total
Matriarchal			
Number	45	22	67
Expected	35.9	31.1	
Percent	23%	11.2%	34.2%
Residual	9.1	-9.1	
Patriarchal			
Number	23	27	50
Expected	26.8	23.2	
Percent	11.7%	13.8%	25.5%
Residual	-3.8	3.8	
Partnership			
Number	31	38	69
Expected	37	32	
Percent	15.8%	19.4%	35.2%
Residual	-6	6	
Other			
Number	6	4	10
Expected	5.4	4.6	
Percent	3.1%	2%	5.1%
Residual	.6	-.6	
Column total	105	91	196
	53.6%	46.4%	100%

Chi-square 8.368 Degrees of freedom 3 Significance $p=.039$

Table C-9

Chi-Square Test of Having Experienced the Divorce, Separation, or Desertion of the Parents or Not by Being Special

Parental Marital Status	Special	Not special	Row total
Stable			
Number	91	79	170
Expected	91.5	78.5	
Percent	46.2%	40.1%	86.3%
Residual	-.5	.5	
Unstable			
Number	15	12	27
Expected	14.5	12.5	
Percent	7.6%	6.1%	13.7%
Residual	.5	-.5	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 0.038 Degrees of freedom 1 Significance p=.844

Table C-10

Chi-Square Test of Having Experienced Parental Absence or Not by Being Special

Parental Absence	Special	Not special	Row total
No absence			
Number	54	65	119
Expected	64	55	
Percent	27.4%	33%	60.4%
Residual	-10.0	10.0	
Absence			
Number	52	26	78
Expected	42	36	
Percent	26.4%	13.2%	39.6%
Residual	10.0	-10.0	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 8.591 Degrees of freedom 1 Significance p=.003

Table C-11

Chi-Square Test of Having Experienced the Death of a Parent or Not by Being Special

Parental Loss	Special	Not special	Row total
Parental Death			
Number	71	71	142
Expected	76.4	65.6	
Percent	36%	36%	72.1%
Residual	-5.4	5.4	
No death			
Number	35	20	55
Expected	29.6	25.4	
Percent	17.8%	10.2%	27.9%
Residual	5.4	-5.4	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 2.966 Degrees of freedom 1 Significance p=.085

Table C-12

Chi-Square Test of Having a Sibling with a Problem or Not by Being Special

Sibling Problem	Special	Not special	Row total
Had a Problem			
Number	24	15	39
Expected	21	18	
Percent	12.2%	7.6%	19.8%
Residual	3	-3	
No problem			
Number	82	76	158
Expected	85	73	
Percent	41.6%	38.6%	80.2%
Residual	-3	3	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 1.169 Degrees of freedom 1 Significance p=.280

Table C-13

Chi-Square Test of Being Separated From Other Children or Not by Being Special

Separation or Not	Special	Not special	Row total
Not separated			
Number	78	81	159
Expected	85.6	73.4	
Percent	39.6%	41.1%	80.7%
Residual	-7.6	7.6	
Separated			
Number	28	10	38
Expected	20.4	17.6	
Percent	14.2%	5.1%	19.3%
Residual	7.6	-7.6	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 7.484 Degrees of freedom 1 Significance p=.006

Table C-14

Chi-Square Test of Having a Role or Not by Being Special

Role or Not	Special	Not special	Row total
Did have role			
Number	68	46	114
Expected	61.3	52.7	
Percent	34.5%	23.4%	57.9%
Residual	6.7	-6.7	
No role			
Number	38	45	83
Expected	44.7	38.3	
Percent	19.3%	22.8%	42.1%
Residual	-6.7	6.7	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 3.715 Degrees of freedom 1 Significance p=.054

Table C-15

Chi-Square Test of Having a Sibling with a Role Within the Family or Not by Being Special

Siblings with a Role	Special	Not special	Row total
1 or more			
Number	54	37	91
Expected	49	42	
Percent	27.4%	18.8%	46.2%
Residual	5	-5	
None			
Number	52	54	106
Expected	57	49	
Percent	26.4%	27.4%	46.2%
Residual	-5	5	
Column total	106	91	197
	53.8%	46.2%	100%

Chi-square 2.084 Degrees of freedom 1 Significance p=.149

Table C-16

Chi-Square Test of Having a Passion or Not by Being Special

Having a Passion	Special	Not special	Row total
No passion			
Number	26	48	74
Expected	40	34	
Percent	13.3%	24.5%	37.8%
Residual	-14	14	
Passion			
Number	80	42	122
Expected	66	56	
Percent	40.8%	21.4%	62.2%
Residual	14	-14	
Column total	106	90	196
	54.1%	45.9%	100%

Chi-square 17.185 Degrees of freedom 1 Significance p=.00003

Chi-Square Tests of Various Variables by the Cohort Group According to Birth
Before, During, or After World War II for the Third Level of Analysis

Table C-17

Chi-Square Test for Sibling Position by Cohort Group

Sibling Position	Born Before War	Born During War	Born After War	Row total
Firstborn				
Number	34	29	38	101
Expected	35.1	23.5	42.4	
Percent	17.6%	15%	19.7%	52.3%
Residual	-1.1	5.5	-4.4	
Laterborn				
Number	33	16	43	92
Expected	31.9	21.5	38.6	
Percent	17.1%	8.3%	22.3%	47.7%
Residual	1.1	-5.5	4.4	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square 3.667 Degrees of freedom 2 Significance p=.160

Table C-18

Chi-Square Test for Family Size based on the Number of Children by Cohort Group

Sibship Size	Born Before War	Born During War	Born After War	Row total
One child				
Number	6	10	11	27
Expected	9.4	6.3	11.3	
Percent	3.1%	5.2%	5.7%	14%
Residual	-3.4	3.7	-.3	
2 children				
Number	16	10	20	46
Expected	16	10.7	19.3	
Percent	8.3%	5.2%	10.4%	23.8%
Residual	0	-.7	.7	
3 children				
Number	22	11	23	56
Expected	19.4	13.1	23.5	
Percent	11.4%	5.7%	11.9%	29%
Residual	2.6	-2.1	-.5	
4 children				
Number	14	8	13	35
Expected	12.2	8.2	14.7	
Percent	7.3%	4.1%	6.7%	18.1%
Residual	1.8	-.2	-1.7	
5 or more				
Number	9	6	14	29
Expected	10.1	6.8	12.2	
Percent	4.7%	3.1%	7.3%	15%
Residual	-1.1	-.8	1.8	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square 5.102

Degrees of freedom 8

Significance p=.747

Table C-19

Chi-Square Test for Age Difference by Cohort Group

Age Difference	Born Before War	Born During War	Born After War	Row total
Less than 5 years				
Number	58	40	71	169
Expected	58.1	39.6	71.3	
Percent	30.2%	20.8%	37%	88%
Residual	-.1	.4	-.3	
5 years or more				
Number	8	5	10	23
Expected	7.9	5.4	9.7	
Percent	4.2%	2.6%	5.2%	12%
Residual	.1	-.4	.3	
Column total	66	45	81	192
	34.4%	23.4%	42.2%	100%

Chi-square .044 Degrees of freedom 2 Significance p=.978

Table C-20

Chi-Square Test for Having a Brother or Not by Cohort Group

Having a Brother or Not	Born Before War	Born During War	Born After War	Row total
No brother				
Number	25	17	27	69
Expected	24	16.1	29	
Percent	13%	8.8%	14%	35.8%
Residual	1	.9	-2	
1 or more				
Number	42	28	54	124
Expected	43	28.9	52	
Percent	21.8%	14.5%	28%	64.2%
Residual	-1	-.9	2	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square .358 Degrees of freedom 2 Significance p=.836

Table C-21

Chi-Square Test for Having a Sister or Not by Cohort Group

Having a Sister or Not	Born Before War	Born During War	Born After War	Row total
No sister				
Number	19	20	28	67
Expected	23.3	15.6	28.1	
Percent	9.8%	10.4%	14.5%	34.7%
Residual	-4.3	4.4	-.1	
1 or more				
Number	48	25	53	126
Expected	43.7	29.4	52.9	
Percent	24.9%	13%	27.5%	65.3%
Residual	4.3	-4.4	.1	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square 3.075 Degrees of freedom 2 Significance p=.215

Table C-22

Chi-Square Test for Having an Eminent Sibling or Not by Cohort Group

Eminent Sibling or Not	Born Before War	Born During War	Born After War	Row total
None				
Number	56	38	57	151
Expected	52.4	35.2	63.4	
Percent	29%	19.7%	29.5%	78.2%
Residual	3.6	2.8	-6.4	
1 or more				
Number	11	7	24	42
Expected	14.6	9.8	17.6	
Percent	5.7%	3.6%	12.4%	21.8%
Residual	-3.6	-2.8	6.4	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square 5.087 Degrees of freedom 2 Significance p=.079

Table C-23

Chi-Square Test for Influential Person by Cohort Group

Influential Person	Born Before War	Born During War	Born After War	Row total
Mother				
Number	35	17	39	91
Expected	31.9	21	38.1	
Percent	18.3%	8.9%	20.4%	47.6%
Residual	3.1	-4	.9	
Father				
Number	7	6	10	23
Expected	8.1	5.3	9.6	
Percent	3.7%	3.1%	5.2%	12%
Residual	-1.1	.7	.4	
Both parents				
Number	15	10	24	49
Expected	17.2	11.3	20.5	
Percent	7.9%	5.2%	12.6%	25.7%
Residual	-2.2	-1.3	3.5	
Other person				
Number	10	11	7	28
Expected	9.8	6.5	11.7	
Percent	5.2%	5.8%	3.7%	14.7%
Residual	.2	4.5	-4.7	
Column total	67	44	80	191
	35.1%	23%	41.9%	100%

Chi-square 7.448

Degrees of freedom 6

Significance p=.281

Table C-24

Chi-Square Test for Parental Style by Cohort Group

Parental Style	Born Before War	Born During War	Born After War	Row total
Matriarchal				
Number	24	17	24	65
Expected	22.6	15.2	27.3	
Percent	12.4%	8.8%	12.4%	33.7%
Residual	1.4	1.8	-3.3	
Patriarchal				
Number	16	12	21	49
Expected	17	11.4	20.6	
Percent	8.3%	6.2%	10.9%	25.4%
Residual	-1	.6	.4	
Other				
Number	27	16	36	79
Expected	27.4	18.4	33.2	
Percent	14%	8.3%	18.7%	40.9%
Residual	-.4	-2.4	2.8	
Column total	67 34.7%	45 23.3%	81 42%	193 100%

Chi-square 1.377 Degrees of freedom 4 Significance p=.848

Table C-25

Chi-Square Test for Stability of Parental Marital Status by Cohort Group

Parental Marital Status	Born Before War	Born During War	Born After War	Row total
Stable				
Number	58	38	70	166
Expected	57.6	38.7	69.7	
Percent	30.1%	19.7%	36.3%	86%
Residual	.4	-.7	.3	
Unstable				
Number	9	7	11	27
Expected	9.4	6.3	11.3	
Percent	4.7%	3.6%	5.7%	14%
Residual	-.4	.7	-.3	
Column total	67 34.7%	45 23.3%	81 42%	193 100%

Chi-square .120 Degrees of freedom 2 Significance p=.942

Table C-26

Chi-Square Test for Parental Absence by Cohort Group

Parental Absence	Born Before War	Born During War	Born After War	Row total
No absence				
Number	42	20	54	116
Expected	40.3	27	48.7	
Percent	21.8%	10.4%	28%	60.1%
Residual	1.7	-7	5.3	
Absence				
Number	25	25	27	77
Expected	26.7	18	32.3	
Percent	13%	13%	14%	39.9%
Residual	-1.7	7	-5.3	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square 6.243 Degrees of freedom 2 Significance p=.044

Table C-27

Chi-Square Test for Parental Death or Not by Cohort Group

Parental Loss	Born Before War	Born During War	Born After War	Row total
Stable				
Number	46	34	58	138
Expected	47.9	32.2	57.9	
Percent	23.8%	17.6%	30.1%	71.5%
Residual	-1.9	1.8	.1	
Death				
Number	21	11	23	55
Expected	19.1	12.8	23.1	
Percent	10.9%	5.7%	11.9%	28.5%
Residual	1.9	-1.8	-.1	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square .629 Degrees of freedom 2 Significance p=.730

Table C-28

Chi-Square Test for Having a Sibling with a Problem or Not by Cohort Group

Sibling Problem	Born Before War	Born During War	Born After War	Row total
Problem				
Number	18	7	14	39
Expected	13.5	9.1	16.4	
Percent	9.3%	3.6%	7.3%	20.2%
Residual	4.5	-2.1	-2.4	
No problem				
Number	49	38	67	154
Expected	53.5	35.9	64.6	
Percent	25.4%	19.7%	34.7%	79.8%
Residual	-4.5	2.1	2.4	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square 2.875 Degrees of freedom 2 Significance p=.237

Table C-29

Chi-Square Test for Separation from Other Children or Not by Cohort Group

Separation from Peers	Born Before War	Born During War	Born After War	Row total
Not Separated				
Number	50	40	67	157
Expected	54.5	36.6	65.9	
Percent	25.9%	20.7%	34.7%	81.3%
Residual	-4.5	3.4	1.1	
Separated				
Number	17	5	14	36
Expected	12.5	8.4	15.1	
Percent	8.8%	2.6%	7.3%	18.7%
Residual	4.5	-3.4	-1.1	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square 3.781 Degrees of freedom 2 Significance p=.151

Table C-30

Chi-Square Test for Having a Role or Not by Cohort Group

Having a Role	Born Before War	Born During War	Born After War	Row total
Had role				
Number	38	24	51	113
Expected	39.2	26.3	47.4	
Percent	19.7%	12.4%	26.4%	58.5%
Residual	-1.2	-2.3	3.6	
No role				
Number	29	21	30	80
Expected	27.8	18.7	33.6	
Percent	15%	10.9%	15.5%	41.5%
Residual	1.2	2.3	-3.6	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square 1.247 Degrees of freedom 2 Significance p=.536

Table C-31

Chi-Square Test for Having a Sibling with a Role or Not by Cohort Group

Sibling with a Role	Born Before War	Born During War	Born After War	Row total
Had role				
Number	31	19	39	89
Expected	30.9	20.8	37.4	
Percent	16.1%	9.8%	20.2%	46.1%
Residual	.1	-1.8	1.6	
No role				
Number	36	26	42	104
Expected	36.1	24.2	43.6	
Percent	18.6%	13.5%	21.8%	53.9%
Residual	-.1	1.8	-1.6	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square .410 Degrees of freedom 2 Significance p=.815

Table C-32

Chi-Square Test for Having a Passion or Not by Cohort Group

Having a Passion	Born Before War	Born During War	Born After War	Row total
No passion				
Number	32	14	27	73
Expected	25.5	17.1	30.4	
Percent	16.7%	7.3%	14.1%	38%
Residual	6.5	-3.1	-3.4	
Passion				
Number	35	31	53	119
Expected	41.5	27.9	49.6	
Percent	18.2%	16.1%	27.6%	62%
Residual	-6.5	3.1	3.4	
Column total	67	45	80	192
	34.9%	23.4%	41.7%	100%

Chi-square 4.228 Degrees of freedom 2 Significance p=.121

Table C-33

Chi-Square Test for Having the Perception of being Special within the Family or Not by Cohort Group

Being Special or Not	Born Before War	Born During War	Born After War	Row total
Special				
Number	34	30	40	104
Expected	36.1	24.2	43.6	
Percent	17.6%	15.5%	20.7%	53.9%
Residual	-2.1	5.8	-3.6	
Not special				
Number	33	15	41	89
Expected	30.9	20.8	37.4	
Percent	17.1%	7.8%	21.2%	46.1%
Residual	2.1	-5.8	3.6	
Column total	67	45	81	193
	34.7%	23.3%	42%	100%

Chi-square 3.885 Degrees of freedom 2 Significance p=.143